

and of treatment having become largely adopted, we present to the Medical profession Ointments which have been thoroughly tested in the diseases indicated.

*For the Urethra two kinds of Catheters
are recommended:—*

Fig. 1.

2nd.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Qin



Fig. 2.

are supplied with Ointment Tubes containing the following medicaments:—

- | | | |
|--|--------------------------|---|
| 1. Iodoform & Eucalyptus | 6. Dermatol | 12. Permanganate of Zinc |
| 2. Do. do. do. & Cocaine | 7. Aristol | 13. Resorcin, Hydrastin & Extract of Belladonna |
| 3. Thallin | 8. Biniode of Mercury | 14. Loretin |
| 4. Do. and Cocaine | 9. Hydrastin | 15. Protargol |
| 5. Iodoform, Eucalyptus & Perchloride of Mercury | 10. Iodol and Eucalyptus | |
| | 11. Sulphate of Zinc | |

Price complete, 5/- each (with Cocaine, 6/- each).

Ointment Tubes without Catheters, 1/6 each; with Cocaine, 2/6 each; by post, 3d. extra
In ordering please specify number of the Ointment Tubes, and also whether the
Stiff Vulcanite Catheters or the Long Flexible Stem is required.

Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

Fig. 3.

WE PREPARE THE FOLLOWING OINTMENTS—

- | | | |
|---------------------------|---|------------------------------------|
| 1. Boric Acid & Glycerine | 6. Ung. Conii | 10. Oxide of Zinc and Boric Acid |
| 2. Cocaine and Morphia | 7. Urg. Belladonna | 11. Perchloride of Iron |
| 3. Ung. Gallæ c. Opio | 8. Chrysarobin, Iodoform and Belladonna | 12. Acetate of Lead and Belladonna |
| 4. Hamamelis | 9. Gallic Acid & Belladonna | |
| 5. Do. and Cocaine | | |

All the above Tubes complete with Pipe, 16 each, with the exception of those containing Cocaine and Conium, which are 2.6 each. By post, 3d. extra.

Fig. 4.

The Vulcanite Stem & Ointments have been made at the suggestion of Dr. DUKE, Cheltenham

- | | | |
|--------------------------|--------------------------------|----------------------------|
| 1. Antiseptic (Iodoform) | 3. Astringent (Tannic Acid) | 5. Anodyne (Cocaine and |
| 2. Do. (Boric Acid) | 4. Escharotic (Chlor. of Zinc) | Morphia), useful in Cancer |

Price of Stem, with Ointment Tube of either Nos. 1, 2, 3 or 4	each	5s.	
No. 5	"	6s.	
Spare "Collapsible Tubes" of Ointment, Nos. 1, 2, 3 and 4	"	2s.	
No. 5	"	3s.	
	By Post	3d.	extra.

N.B.—We will be pleased to supply Tubes filled according to physicians' own formula.

R. SUMNER & CO. Ltd. WHOLESALE AND EXPORT DRUGGISTS. LIVERPOOL.

"ANTISEPTICINE" and Its Preparations.

Registered.

"ANTISEPTICINE" is a non-toxic, non-irritating, and non-escharotic antiseptic, composed of Thyme, Eucalyptol, Peppermint, Gaultheria, and Benzo-Boracic Acid. It has been found most effective in all Catarrhal conditions of the mucous membrane, and an excellent Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhoea and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other fevers, and, in fact, all Zymotic diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price 2s. 6d. per lb.



"ANTISEPTICINE"

Registered.

DUSTING POWDER

Is a strong germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative promoting rapid Cicatrisation and Granulation.

In Dusting Bottles 1s. each, or per lb. 5s.

"ANTISEPTICINE" PASTILLES

Registered.

"ANTISEPTICINE" PASTILLES have been made at the suggestion of a medical man who found the "ANTISEPTICINE" itself so valuable in Throat Affections. Each Pastille contains five minims of the "ANTISEPTICINE."

In Boxes, 6d. each.

Or, in bulk, 2s. 6d. per lb.



"ANTISEPTICINE" TABLETS

Registered.

For the speedy production of an Antiseptic and Deodorising liquid for irrigation of the nasal, urethral, and vaginal passages, or Lotion for ulcerated throat, etc.

One Tablet is sufficient to make 10-oz. of Antiseptic Lotion.

Boxes containing 50, 1s. each.

"ANTISEPTICINE" SUPER-FATTED SOAP

Registered.

IN POWDER.

A powerful Antiseptic Soap, useful in various parasitical Skin Affections, and also refreshing as a Toilet Soap.

The Powder is a most convenient method for local application.

In Sprinkler Bottles, 8/- doz.; Bulk, 2/- per lb.

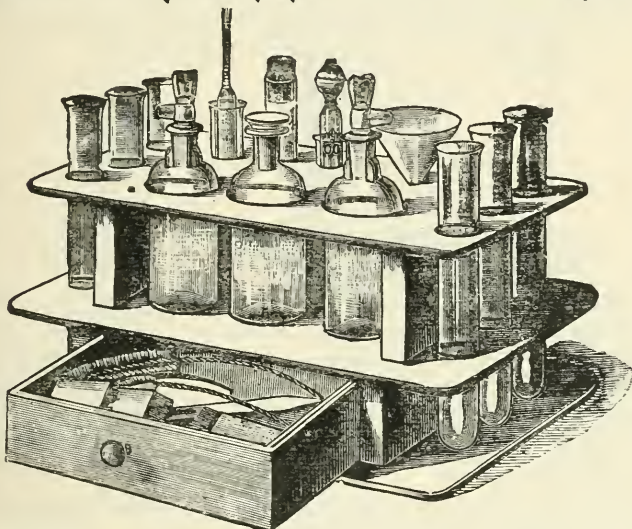


MANUFACTURED BY

R. SUMNER & CO., Ltd., WHOLESALE DRUGGISTS, LIVERPOOL.

SUMNER'S NEW URINARY TEST STAND.

PRICE 10/6 EACH NET.



PRICE 10/6 EACH NET.

Messrs. SUMNER & CO. are particularly desirous of calling the attention of medical gentlemen to their new **Urinary Test Stand**. This handy little Stand has been specially designed with a view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinarily low price. We offer it as being equal in every way to the more elaborate Stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10½-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting room table. The contents are as follows:—

Urinometer
Albuminometer
Spirit Lamp
Drop Pipette with India
Rubber Suction Ball
Graduated C.C. Tube
Test Tubes

2 oz. Stoppered Bottle of
Nitric Acid
2oz. Drop Bottle of Roberts'
Test Solution for Sugar
2 oz. Drop Bottle contain-
ing Esbach's Test Solu-
tion for Albumen

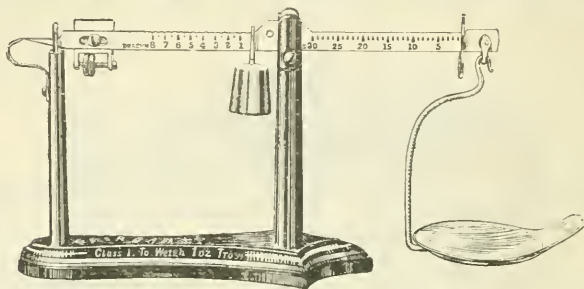
Funnel
Test Tube Brushes
Packet each Red and Blue
Litmus Paper
Packets of Filter Paper
Watch Glass
Graduated Pipettes

From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

IT IS ADMIRABLY ADAPTED FOR USE IN HOSPITAL WARDS.

R. SUMNER & CO. Ltd., 50a, Lord Street, LIVERPOOL.

NEW DISPENSING SCALE



THIS Scale is particularly convenient in dispensing, as it obviates the necessity of small loose weights. The entire capacity from $\frac{1}{2}$ grain to 8 drachms is obtained by the large and small poises shown on the beam.

Much time is saved, and greater accuracy is obtained, as small loose weights are constantly collecting dirt or becoming worn in cleaning, which all tends to inaccuracy in weighing to say nothing of the inconvenience and annoyance of often losing such small weights as those indicating 10 grains and less.

This machine is small, takes but little room, can be easily moved about, and is always ready for instant use.

The loose glass pan will be found convenient, as small quantities of chemicals can easily be seen, and being of smooth glass it is easily cleaned.

These machines are quickly adjusted by the small balance balls shown on the beam, and each machine is stamped by the Inspectors of Weights and Measures before being sent out.

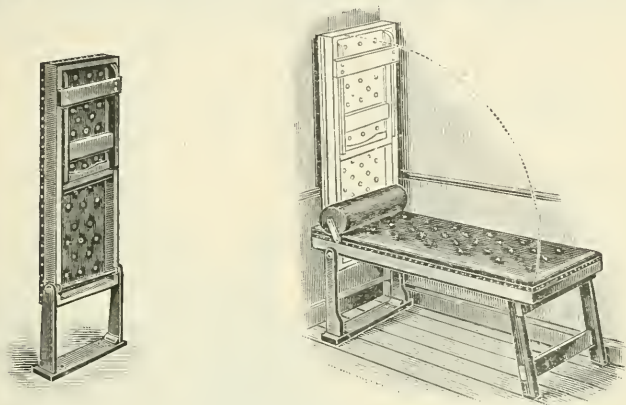
For accuracy, convenience, and durability, these machines surpass any scale of this class that has ever been offered, for fine weighing of small quantities. They will save their cost many times over during the first year of their use.

Price, 18/6 nett.

If purchasing a Personal Weighing Machine, first see Fairbanks' Catalogue, which can be obtained from R. Sumner & Co., Ltd.

R. SUMNER & CO., Ltd.,
Wholesale & Export Druggists.
LIVERPOOL.

SUMNER'S "Lean-to" Consulting Room Couch



MEDICAL MEN frequently have such limited floor space in their Consulting Rooms, that they are unable to have a couch. The "LEAN-TO" COUCH is so devised, that when not in use, it leans back against the wall, taking up only a space of about six inches. When required it is pulled forward from the wall, and forms an excellent piece of Furniture. They are well made, and upholstered with best American cloth.

Price, including Pillow - £5 5 0 net.

MANUFACTURED BY

R. SUMNER & CO., Ltd.,
50a, Lord Street, LIVERPOOL.

THE "HATCH" UNIVERSAL INHALER

(PATENTED).

THE MOST PERFECT INHALER

. Designed on Hygienic Lines. .

PRICE.

Inhaler, as illustrated, with Screw Funnel and Cap—

£1 19 0

Inhaler with fixed Funnel and Celluloid Stopper

£1 17 6

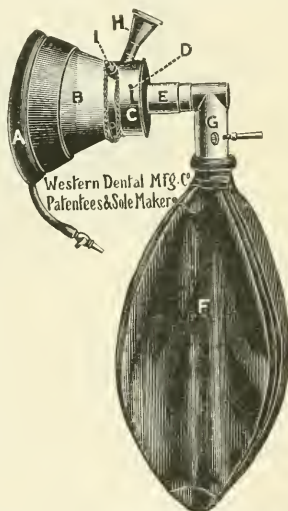
Box of Prepared Lint Diaphragms
1s.

50-grm. Tube Pure Ethyl Chloride, with Automatic Stopper 3s. 9d.

(Can be refilled.)



A—Air Pad
B—Celluloid (transparent) Body
C—Metal Chamber



D—Bayonet Catch
E—Connecting Tube
F—India Rubber Bag

G—Angle Valve
H—Funnel
I—Screw Stopper.

This Inhaler is so designed that it can be used for

ETHYL
CHLORIDE,
SOMNOFORME,
NITROUS
OXIDE GAS,
ETHER,
CHLOROFORM,
or either
combination.

*Descriptive Pamphlet
sent on application.*



Approved by Leading Anæsthetists
of the day.

SPECIAL AGENTS FOR MANUFACTURERS:

R. SUMNER & CO., Ltd.,
50a, Lord Street, LIVERPOOL.

For Constipation, Gout and Rheumatism,
Liver Complaints, Obesity, &c.,

PRESCRIBE

Hunyadi János

**THE BEST NATURAL
APERIENT WATER.**

Directions for Use.

Dose.—To relieve constipation the average dose for an adult is from a third to half a tumbler, taken on an empty stomach on rising. To obtain the depurative and tonic effects in dyspepsia, biliousness, congestion of the liver, &c., a quarter of a tumbler should be taken *every* morning before breakfast.

"Hunyadi János" may be taken pure or mixed with hot or cold water. If hot water be used the temperature should be high enough to make the mixture as hot as can be drunk comfortably. If cold, the water should be at the ordinary temperature, that is to say, not iced or ice-cold.

A draught of pure water, hot or cold, taken immediately after, increases the efficacy of the laxative and obviates any after-taste.

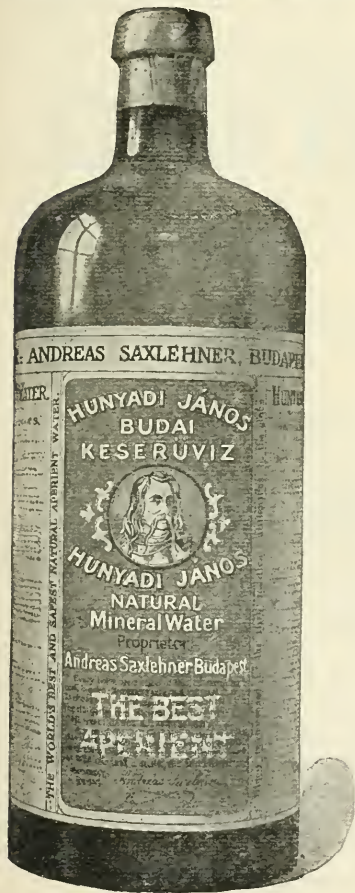
For Children.—The dose is proportional to the age. Between 5 and 10 years of age from one to two teaspoonfuls of the water, which may be mixed with milk, will be sufficient. Above 12 the dose is a quarter of a tumbler, taken as above.

N.B.—When administered to persons in bed, somewhat larger doses are required to produce the same effect.

• •

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**Andreas Saxlehner,
BUDAPEST**



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THESE well appointed and commodious TEMPERANCE HOTELS will, it is believed, meet the requirements, at moderate charges, of those who desire all the conveniences and advantages of the larger modern licensed hotels.

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(FIRST CLASS).

THIS HOTEL will be found Comfortable and Home-like,
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**Only a Minute's Walk from the
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Proprietors.

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WILD'S TEMPERANCE HOTELS

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30 to 40, Ludgate Hill, E.C.

*Central for Charing Cross, Cannon Street, and Holborn Viaduct
Stations for the Continent.*

ALSO AT

70 and 71, Euston Square,

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CLEANLINESS AND QUIET.*

CENTRAL FOR BUSINESS OR PLEASURE.

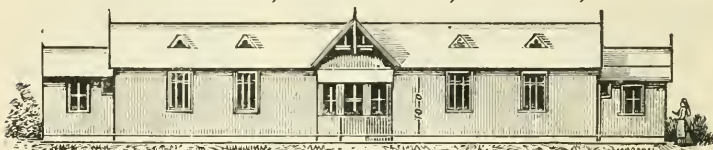
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ESTABLISHED 1834.

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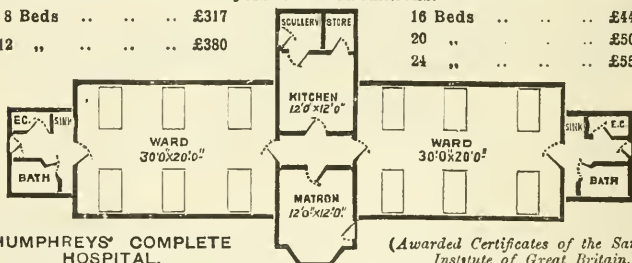
8 Beds £317

12 „ £380

16 Beds £443

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24 „ £584

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HOSPITAL.**(Awarded Certificates of the Sanitary
Institute of Great Britain.)*Our Hospitals have been approved and erected at:—*

Abingdon, Accrington, Amptihill, Amble, Annfield Plain, Ashby-de-la-Zouch, Barking, Barrow-in-Furness, Barton Regis, Beaconsfield, Bedford, Bedminster, Belfast, Biddulph, Bideford, Bilbao, Birmingham, Bishop's Castle, Blackpool, Blyth, Bolton, Bootle, Bournemouth, Boxmoor, Bracknell, Bradford, Bridgend, Bridgnorth, Brighton, Bristol, Buckingham, Bulwago, Bury, Bulford (Camp), Bury St. Edmunds, Calverley, Canterbury, Cape Town, Cardiff, Carnarvon, Castleford, Chatham, Chester, Chester-le-Street, Chesterfield, Cleckheaton, Coalville, Clonmel, Crediton, Cromarty, Croydon, Curragh Camp, Dagenham, Dartford, Darenth, Devonport, Doncaster, Dorking, Dover, Dublin, Durham, Ealing, Eardson, Eastbourne, East Ham, Eastry, Edinburgh, Enfield, Easton, Eton, Fort William, Fulham, Folkestone, Finchley, Gillingham, Gravesend, Grays, Great Yarmouth, Greenhithe, Gloucester, Godalming, Gosport, Guildford, Halifax, Hambledon, Hampstead Norris, Hanley Castle, Hants Reformatory, Hardingstone, Harrogate, Hawarden, Hayes, Hebburn-on-Tyne, Hereford, Hertford, Hexham, Hitchin, Homerton, Houghton-le-Spring, Hull, Hungerford, Hythe, Ilkley, Ipswich, Jarrow, Johannesburg, Keighley, Kendal, Keynsham, Kildermminster, Kingsholm, King's Norton, Lambeth, Leeds, Leicester, Leigh (Essex), Leigh (Manchester), Leighton Buzzard, Lewes, Leyton, Liverpool, Liversedge and Mirfield, Llandaff, Llandrindod Wells, London, Lowestoft, Ludlow, Luton, Macclesfield, Maidenhead, Maidstone, Malvern Link, Manchester, Mansfield, Manston, Market Harborough, Melton Mowbray, Metropolitan Asylums Board, Motherwell, Newport, Newquay, New Romney, Northfleet, Northleach, Nottingham, Oldham, Orsett, Otley, Oxford, Pembroke Dock, Plymouth, Pontardawe, Portland, Portsmouth, Queensferry, Ramsgate, Radcliffe, Rawtenstall, Redcar, Redhill, Rochford, Rochester, Rushden, Salford, Scarborough, Sedgefield, Shanklin, Sheffield, Slough, South Mimms, South Shields, Shirehampton, Southampton, Stamford, Stannington, Stapleton, Stockton, Stone, Stowmarket, South Stoneham, St. Alban's, Stratford-on-Avon, Strood, Sullins (Black Sea), Swansea, Tadasar, Taunton, Tenby, Thiborg, Tonbridge, Tottenham, Tunbridge Wells, Treviso (Italy), Tynemouth, Uppingham, Upton-on-Severn, Uxbridge, Wakefield, Ware, Wareham, Warwick, Watford, Watford, Wellingborough, Welwyn, West Ham, Weston-super-Mare, Wetherby, Whatstandwell, Whitehaven, Whitlow, Wigan, Willerden, Willington Quay, Wimbledon, Windsor, Wolverhampton, Wombourne, Worcester.

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Qualities and Advantages claimed for Humphreys' Hospitals:—Durability, Stability, Simplicity, Facility of Erection and Removal, Cleansing and Disinfection, and are fitted for all climates. These Hospitals are wood lined, varnished, with felt under all the galvanized iron.

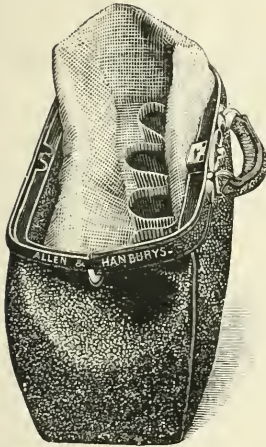
Telephone: 881, WESTERN.

Telegraphic Address: "HUMPHREYS, KNIGHTSBRIDGE, LONDON."

ASEPTIC MIDWIFERY AND SURGEONS' BAGS

PATENT No. 17232.

ADVANTAGES.



MIDWIFERY BAG, WITH MOVABLE
ASEPTIC LINING.

The Bags are fitted with removable linings, hence if they become soiled the lining can be taken out and thoroughly washed with an antiseptic solution.

The frame is so constructed that the bag on being opened will remain so. A great convenience in use.

The lining is fitted with a pocket, and with adjustable loops for any sized bottles.

MIDWIFERY BAG,

WITH MOVABLE LINING, WITHOUT INSTRUMENTS, as illustrated.

No.					s.	d.
1.	Best Dull Cowhide,	16-in. long,	6-in. deep	...	15	0
2.	Best Morocco	do.	do.	...	17	6
3.	Best Dull Cowhide,	17-in. long,	7-in. deep	...	20	0
4.	Best Morocco	do.	do.	...	22	6
5.	Best Dull Cowhide,	17-in. long,	8-in. deep	...	22	6
6.	Best Morocco	do.	do.	...	25	6
7.	Do. do.	16-in long,	8-in. deep	...	23	6

Any of the above bags fitted with five 1-oz. stoppered bottles, in boxwood cases, 6s. 3d. extra
Packed in a box, and sent free by post 1s. 6d. extra.

(The above measurements are length at bottom of bag, and a depth from frame to bottom when open.)

Allen & Hanburys Ltd.,

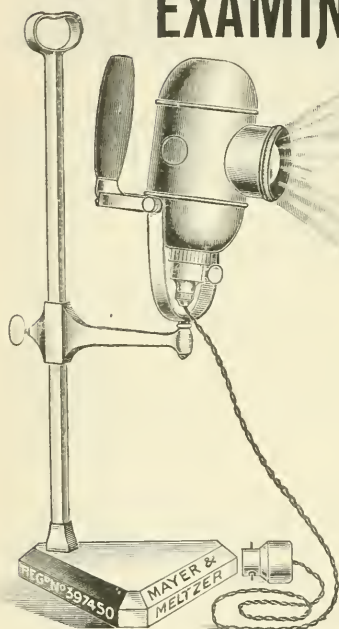
SURGICAL INSTRUMENT MANUFACTURERS,

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The "UNIVERSITY" (M. and M. Regd.) EXAMINATION LAMP.

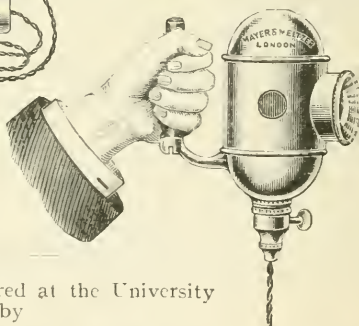


For the Ward,
The Operation Theatre,
The Out-Patients'
Department,
AND
The Consulting Room
OF
General Surgeons,
Ophthalmologists,
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*As supplied to the London and
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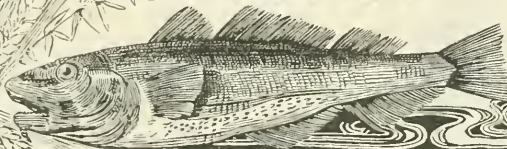
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71, Great Portland St., LONDON, W.

MALTINE WITH COD LIVER OIL



The difficulty of exhibiting Cod Liver Oil is solved in
"MALTINE WITH COD LIVER OIL"

by molecular incorporation of a sufficient quantity—30 per cent—of the best Cod Liver Oil in the best malt extract "Maltine." This combination is not only readily tolerated by the fastidious, but gives the best results as regards increasing weight, and improving appetite and general nutrition. The oil is rendered easily digestible, and its therapeutic effect is reinforced by the association with a complementary, highly assimilable nutrient.

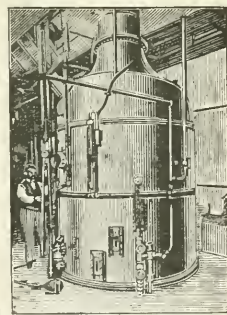
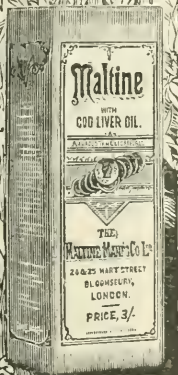
MALTINE WITH HYPOPHOSPHITES.

By its conversion of farinaceous foods into Maltose and Dextrine, and its stimulation of general digestion, "Maltine" promotes the

assimilation of the Hypophosphites, and is itself a valuable Bone-forming agent, as it contains the natural phosphates of the best malt.

Each fluid ounce contains:

Hypophosphite	Lime	-	3 grains.
"	Iron	-	2 "
"	Soda	-	3 "



Samples
Sent
free of Charge
to
Physicians.

The Maltine Manufacturing Co. Ltd.
 24 & 25, HART ST. BLOOMSBURY, LONDON, W.C.

PURE, SAFE, DRINKING WATER.



BURROW'S MALVERN WATERS,

Natural (Still) and "Sparkling" (Aerated).

The "ALPHA BRAND" from the famous Malvern Spring.

PROTECTION FROM TYPHOID

And all other Diseases caused by Hard or Impure Water.

With this matchless Malvern Water Messrs. Burrow produce the **FINEST MINERAL WATERS** in the WORLD—"Malvern Seltzer" and **REAL Soda Water**, **REAL Potass** and **Lithia Waters**, &c.

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W. & J. BURROW, The Springs, MALVERN,

Who send Six Dozen of any of these Waters,
CARRIAGE PAID.

Be ALWAYS careful to obtain the "ALPHA BRAND."

Rogers' No.1 Spray

Is acknowledged as

"THE STANDARD

OF PERFECTION"

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MEDICAL SPRAYS
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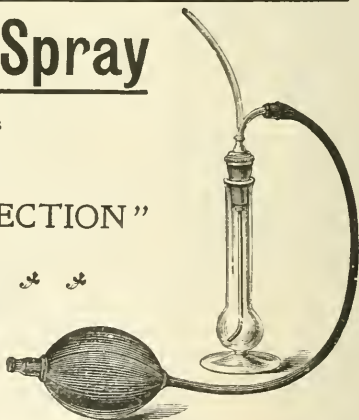
Successor and
Late Manager to

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327, OXFORD STREET, LONDON, W.

Telephone : 4246 GERRARD.

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CLEAR BUT NOT PURE.

The water referred to below was of very bad colour, but even water that is clear may contain the germs of malignant disease. Apart from living germs, water often contains much mineral and vegetable matter that is detrimental to health.

Boiling is a rough expedient, and though it may kill living germs and cause the deposition of much lime, it does not purify the water, and is not an absolute preventive of the evils which arise from the use

of impure water. Filters are unreliable.

"Distillation is the most perfect means," says the *Hospital*, "of purifying water." The **GEM PURE-WATER STILL**, approved by the *Lancet*, and used by H.M. Government, produces pure water, sterilised, and palatable. Full particulars free.



IMPORTANT NOTICE.

"It is imperatively necessary to boil all water before drinking, as the public analyst has certified that samples analysed by him are not fit for drinking purposes."

The foregoing is a notice recently issued by the borough officials of Battersea. The Medical Officer said that great danger existed.

The GEM SUPPLIES CO.

(Dept. No. 106)

Ltd.

121, Newgate St., London, E.C.

Telegraphic Address: "Tenotomy, London."

Telephone: 1489 Gerrard.

ALFRED COX & SONS,

120, NEW BOND STREET, LONDON, W.

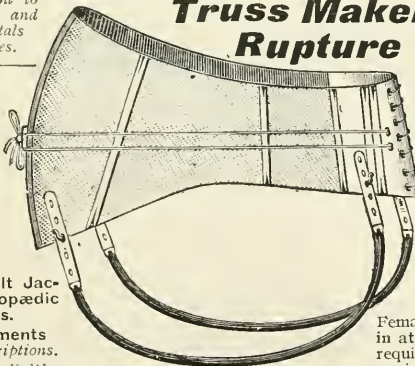
(Late of 108, NEW BOND STREET.)

Surgical Instrument, Cutlers, & Bandage MAKERS,

By Appointment to several London and Provincial Hospitals and Infirmaries.

Specialities:

ELASTIC STOCKINGS, BELTS, and TRUSSES
ARTIFICIAL LIMBS,
CHEST EXPANDERS,
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Aseptic Instruments of all descriptions.
Belts for Appendicitis.
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Truss Makers to the Rupture Society

Specialities

STERILIZERS for Instruments, Dressings & Milk BATTERIES with Dry or Wet Cells.
Personal and Infant Weighing Machines.
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Experienced Male & Female Assistants always in attendance, and when required wait on Customers in Town or Country.

BRAND'S Meat Juice.

Prepared from **FINEST MEAT ONLY.**

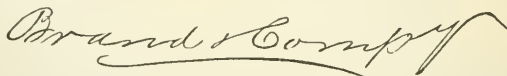
MEDICAL PRESS, *July 30th, 1902, says:—*

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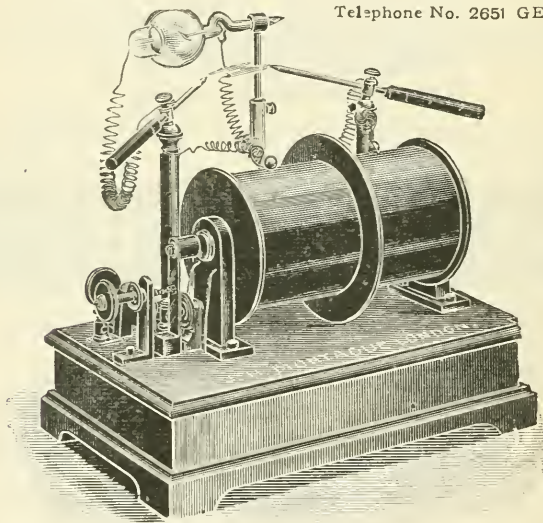
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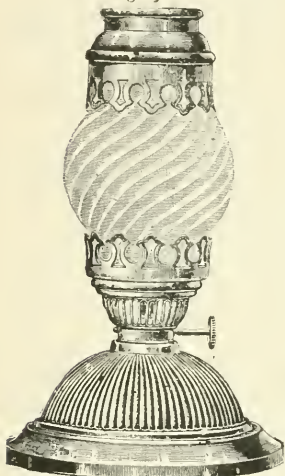
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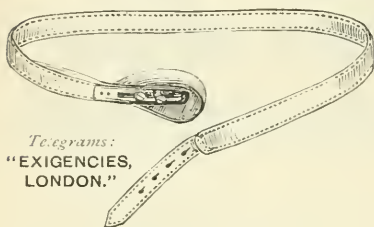
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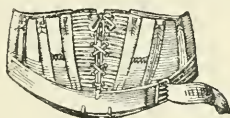
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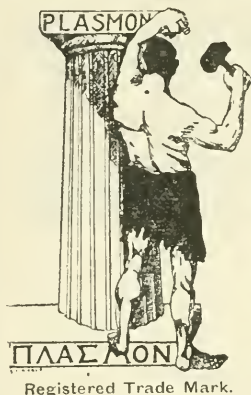
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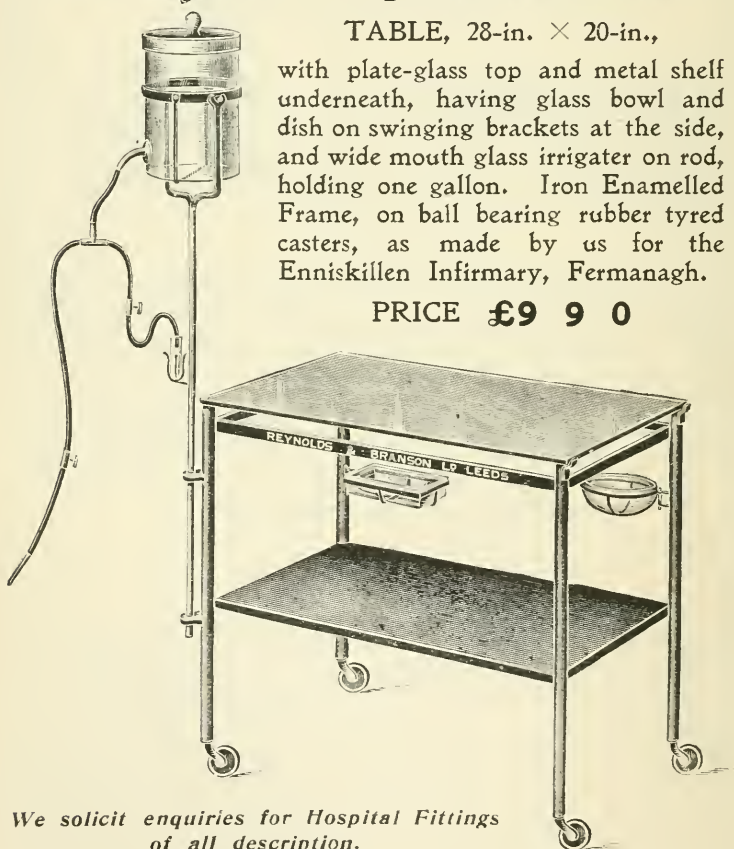
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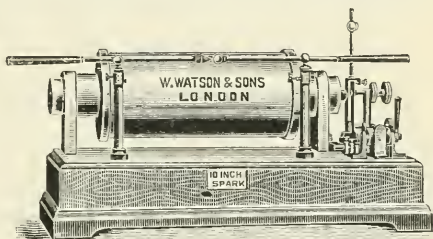
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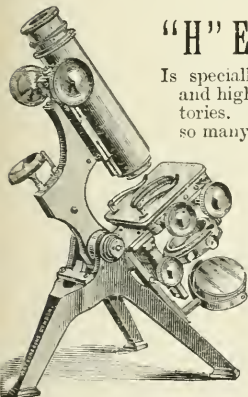
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Battle's Solution of Opium may be given with the greatest of safety in those cases where an opiate is required or indicated, and from its great purity, absence of all hurtful matter, such as narceine and resinous bodies, is admissible when all other preparations would prove hurtful.

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THE MEDICAL PRESS AND CIRCULAR, September 3rd, 1902:—"ANTIPHLOGISTINE.—This preparation appears to be admirably suited for the purpose for which it is intended, namely, as a soothing antiseptic or poultice dressing applicable to a great variety of cases. This preparation has met with success in America as a local application of great value in a large number of different classes of cases, and we would urge our medical friends to give it a careful trial, as we have satisfied ourselves by analysis that the composition corresponds with the ingredients stated in the excellent pamphlet that is issued by those who are responsible for its production."

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THE LANCET, June 6th, 1903:—"This basis is a pure silicate. Spread over the tissue 'ANTIPHLOGISTINE' keeps them agreeably moist, and has a decidedly sedative effect."

THE LANCET, page 62, June, 1902:—"The vehicle is a very pure clay or silicate, according to our analysis. The preparation may be used with advantage as an external application in inflammatory conditions. 'ANTIPHLOGISTINE' maintains a moist condition of the tissues, and exerts a soothing effect, while on account of its marked antiseptic properties it may be used in the treatment of open wounds and ulcers."

THE GENERAL PRACTITIONER, April 11th, 1903:—"Medical men who have tested the substance testify that it possesses decidedly hygroscopic properties. The theory of its action is that by its affinity for fluids it abstracts these from the tissues, and thus relieves congestion and removes infiltration."

GUY'S HOSPITAL GAZETTE, May 23rd, 1903:—"It certainly fulfils the claims of its makers—'harmless, soft, and pliable, non-irritating, non-toxic, soothing, and antiseptic poultice and surgical dressing, always ready for immediate use, possessing hygroscopic, nutrient, exosmotic, and osmotic, and indirectly anodyne and hypnotic properties.' Many use this preparation in America and are enthusiastic about its merits."

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It has been our endeavour each year to give a series of original illustrations of practical and permanent value to our readers. This year we have made a new departure by introducing *Stereoscopic* views, and we think that all our readers who examine these with the little instrument provided, will see how greatly this method facilitates the study of structures which it would be otherwise difficult to illustrate.

We may also mention the series of Plates showing the nature and distribution of the eruption in Small Pox and other infectious diseases, the early detection of which is of great importance to the practitioner.

It is only by the closest revision of the matter contributed to the *Annual*, that we are able to keep it within moderate dimensions. We believe that this adds to the practical value of the work, and that the temptation to increase the size of the volume is best resisted. We regret that this year the wealth of material has compelled us to trespass more than usual upon the kind consideration of our Contributors. This has never yet failed us: without it our task would be impracticable. To make the volume as useful to our readers as its predecessors, has been the aim of all engaged in its collaboration.

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THE MEDICAL ANNUAL.

Part I.—The Dictionary of Materia Medica and Therapeutics.

REVIEW OF THERAPEUTIC PROGRESS, 1903,

BY

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GENERAL REVIEW.

In the past year no great therapeutical discovery has been made. The output of new synthetic remedies has been maintained, and has put us in possession of several new hypnotics and analgesics. In almost all these cases, however, the remedies are still on trial, and probably in only a few instances will their claims be made good. Among them **Mesotan** has attracted considerable attention. It has been introduced as a substitute for methyl salicylate, on the ground that the pungent odour of the latter is obnoxious to patients. As far as our own observations go, mesotan is not an improvement on methyl salicylate. It is liable to cause irritation of the skin, amounting in some cases to urticaria and universal dermatitis. **Helmitol**, a new formaldehyde preparation, is likely to prove a useful drug. In some cases in which we have prescribed it, it acted more powerfully than urotropin as an urinary antiseptic.

One of the most interesting discoveries of the year was the result of an accident. To ear-mark the vintage of a certain year a small quantity of **Phenol-pt halein** was added to the wine,

under the belief that it was an inert substance. When the wine was put upon the market complaints began to be made that it acted as a purgative. The action of phenol-phthalein was then more carefully investigated, and now, under the trade name of **Purgen**, it is largely advertised as an innocuous purgative specially suited for infants and children.

On the other hand certain remedies strongly recommended in former years have died a natural death. This is perhaps most strikingly seen in the case of the cacodylates, which have proved to be inferior to the ordinary preparations of arsenic.

Among the methods of administering drugs which seem to be going out of use is subarachnoid medication. Very little has been heard recently of lumbar anæsthesia. A method of epidural injection has recently been recommended as being safer. The use of subcutaneous injections of gelatin also seems to be on the wane, and the fact that a French observer was able to collect no less than twenty-three cases of tetanus, which have occurred after their use within the last two years, will not increase the popularity of this particular form of treatment.

Considerable attention has been paid to methods of anæsthesia. A method of using ether as a drop anæsthetic has been devised, and the addition of **Adrenalin** to cocaine solutions has been found to prolong the local action. A curious return to an old system has been the use of morphine and scopolamine to produce a deep **Narcotic Sleep** in which operations might be performed. It has been found that this is quite practicable, and upwards of 300 operations have been thus performed. There is, however, considerable risk attached, and already three deaths have occurred. The advantages claimed for this method are that it dispenses with the anæsthetist, and lessens after-sickness.

Organotherapy is very much in the background. Some interest attaches to the attempts made by German and Dutch observers to treat exophthalmic goitre with the serum and milk of goats after the thyroid gland of the animals have been extirpated.

Numerous **Yeast Extracts** have been put upon the market. They are stated to be equivalent in composition and action to the ordinary meat extracts, while they possess the great merit of cheapness. They differ in containing no kreatin, to which the stimulating action on the appetite is usually ascribed, but they are very rich in xanthin bases, and appear to increase the excretion of uric acid.

DICTIONARY OF REMEDIES.

ADRENALIN.

Abel¹ has obtained highly soluble and apparently stable salts of epinephrin by extracting the suprarenal glands with water, adding alcohol, and subsequently precipitating with ammoniated solution of zinc. On removing the zinc by sulphuretted hydrogen, a basic, minutely crystalline, somewhat unstable compound is obtained, which is converted by mineral acids into physiologically active epinephrin.

Taramasio² finds but little variation in the toxic dose. Using adrenalin he finds that the following table sums up the results :—

	Dose never fatal.	Sometimes fatal.	Always fatal.
Frogs	·024 grains	·025 grains	·50 grains
Guinea-pigs	·002 „	·004 „	·02 „
Rabbits	·002 „	·084 „	·01 „

The slight toxicity in frogs is due to the fact that in them pulmonary respiration is not essential, as the skin can take on part of the functions of the lungs. He believes that death in warm-blooded animals is due to pulmonary œdema, rather than to paralysis of the nervous system. In frogs the nervous lesions are the cause of death.

Mills and Muhlberg,³ on theoretical grounds, state that adrenalin may be of value in cases of **Heart Failure during Anæsthesia**, especially where the respiratory centres are not paralysed. It should be given subcutaneously, and the site of injection massaged. Dilution with normal saline makes absorption slower and gives a more prolonged and less energetic rise of pressure. Adrenalin is indicated for the vaso-motor collapse following cocaine or chloroform poisoning, and possibly for shock after operation. Longford gave intravenous injection of adrenalin in two cases of cardiac failure, after ordinary treatment and subcutaneous use of adrenalin had proved ineffective. In the first case $\frac{1}{200}$ gr. produced a marked effect in forty-five seconds. Consciousness returned, the patient struggled and resisted, respirations became full and deep, and the pulse fell from 124 to 84. The effect completely passed off in five minutes. He found that in healthy people adrenalin was equally active if given by the mouth. The rise of blood-pressure comes on in five minutes, lasts about ten minutes, and is followed by a distinct reactionary fall. The pellets of suprarenal gland and the powdered extract are much slower in their action, taking five

days before the rise is manifest. Owing to the slower and more gradual absorption the effect is more sustained.

Meara has discovered a new use for adrenalin as an **Anti-pruritic**.

Mayer⁴ states that adrenalin is an extremely valuable remedy in **Nasal Work**, causing local ischæmia which may last for hours. Some people have an idiosyncrasy, and adrenalin increases congestion in them. Its most useful application is in acute inflammatory conditions. In vaso-motor rhinitis an immediate palliative effect was obtained, and similarly in hay fever, but it is not curative. In operations there was more bleeding subsequent to its use than without it. It should be used sparingly, and the operated nostril should be packed. It is absolutely contra-indicated in adenoids and removal of the tonsils. By clearing the field and permitting appropriate treatment to be applied accurately, it was useful in epistaxis. Marple finds the solution a very decided vaso-constrictor, but not curative. By adrenalin a bloodless operation can be secured, but he is not convinced that this was an unmixed advantage, as the risk of infection is increased.

Elsberg⁵ finds that a drop of a 1-1000 solution of adrenalin chloride injected subcutaneously causes a slight burning sensation, which is followed by blanching of the skin over an area of about 2 inches in diameter, lasting for six to twelve hours. Weaker solutions of 1-5000 to 1-15,000 take longer for the blanching to develop, and it only lasts three to six hours. No deleterious effects follow the injection. If cocaine and eucaine solutions containing adrenalin in the proportion of 1-5000 to 1-20,000 be injected, the anæsthetic properties are retained, while the blanching extends one or two inches beyond the area infiltrated. In minor operations only the larger vessels bleed. The healing was not interfered with. Theoretically, secondary hæmorrhage might be expected at the end of from three to twelve hours, but practically it did not occur in thirty cases. For small operations the addition of adrenalin is an advantage, as it raises blood-pressure and counteracts the depressing action of cocaine.

Amat⁶ finds that adrenalin rapidly relieves the pain in **Keratitis**, **Iritis**, and even in **Glaucoma**, where it reduces ocular tension. Corneal opacities due to contusions rapidly cleared up under adrenalin, which also appears to modify the opacities of keratitis in syphilitic iritis. Adrenalin reduces the swelling of the lachry-

mal canals, thus allowing fluid to pass and avoiding the necessity of using a sound.

REFERENCES.—¹*Johns Hopkins Bull.* Feb., March, 1902; ²*Rev. Méd. d'l Suisse*, 1902, p. 589; ³*Clev. Med. Jour.* Dec. 1902; ⁴*Med. Rec.* June 28, 1902; ⁵*Amer. Med.*; ⁶*Bull. Gén. de Thérap.* June 23, 1902.

AGURIN.

Ketly¹ thinks this new diuretic an improvement on diuretin, as it does not contain salicylic acid, and so does not cause gastric irritation or harm to the kidneys. Agurin is a double salt of theobromine and sodium acetate. A white soluble powder, it is slightly alkaline, and has a bitter salt taste. Ketly used it in thirty-four cases in various conditions. He gave 30 to 45 grains per diem in wafers. Most patients stood the drug well. In two cases where gastric irritation was caused by the powder, a solution in aqua menth. pip. was non-irritating. In **Heart Cases** diuresis was seen in about two days, and reached a maximum about the fourth day. The diuretic effect took place equally if the heart muscle was weak, or if it had been strengthened by digitalis. In **Peritonitis and Cirrhosis of the Liver** agurin acted well, but in chronic nephritis it has no effect, though it acted in cases of arterio-sclerotic granular kidney.

Ceruraka² finds agurin a **Powerful Diuretic** either when given alone or when combined with diuretics or digitalis. The results are specially good where there are œdema or effusions into the pleural or peritoneal cavities. In doses of about 75 grains per day agurin has a marked diuretic action in cardiac dropsy. In only two cases did headache occur. This author considers agurin more powerful than diuretin, the diuretic result being more pronounced, and of longer duration, while the unpleasant results are practically *nil*.

REFERENCES.—¹*Die Heilk.* No. 8, 1902; *Brit. Med. Jour.* Jan. 17, 1903; ²*Prag. Med. Woch.* No. 48, 1902; *Treatment*, Feb. 1903.

ALCOHOL.

Schmidt¹ warmly recommends the use of alcoholic compresses in **Inflammatory Conditions** of the female genital organs. The method is as follows: The abdomen, including the sides, is covered up to the navel with a linen compress soaked at first in 60 per cent, later in 95 per cent alcohol. Over this compress comes a layer of guttapercha tissue to prevent evaporation. The whole is fixed by means of a flannel bandage. The compress is renewed three times in the day. Simultaneously a tampon soaked in 30 per cent alcohol is inserted into the vagina, and

allowed to remain there for twenty-four hours. On removing the tampon a vaginal irrigation with 1 per cent lysol solution is given. Rest in bed is necessary, and the diet should be unirritating. If the diseased condition permits, massage should be combined with the alcoholic treatment. If menstruation occurs, all treatment is stopped. As a rule this treatment is well borne. Even if at the commencement there be pain, increased temperature and pulse rate, the treatment should be continued till there is improvement. Schmidt has treated 70 inflammatory cases on this plan. Of these 33 were endometritis and perimetritis, in 26 in addition the tubes and ovaries were implicated, 1 was a case of colpitis, and the remaining 10 were cases of inflammation of the endometrium and parametrium. The results obtained under the alcohol treatment were better than that obtained with ichthyol in a series of 26 similar cases.

There is a great divergence of opinion regarding the value of alcohol. Pharmacologists hold that it is never a true stimulant, but acts always as a protoplasmic depressant. On the other hand, clinical observations show that alcohol possesses valuable stimulant properties in diseased conditions. Hare² attempted to explain this apparent antagonism. He has made a number of experiments on the bacteriolytic power of the blood serum before and after the use of alcohol in medicinal doses. His observations were made on patients suffering from chronic diseases, which present but little variation in the general condition from day to day. The bacteriolytic action was tested against the colon bacillus. The use of alcohol for several days increased the bacteriolytic power to an extraordinary extent. The method consisted of drawing off the clear serum from the clot by means of a sterile graduated pipette. This serum was then mixed in certain proportions with physiological salt solution, and a few drops of bouillon was added. These mixtures were inoculated with suspensions in physiological salt solution of an eighteen-hour growth on agar slants. Six loopfuls were inoculated on each portion of serum to be tested, and three loopfuls were immediately plated. As controls six loopfuls of the suspension were mixed with one cubic centimetre of physiological salt solution containing three drops of bouillon. The controls and serum tubes were then put into an incubator at 37° C. and tested at intervals of one, three, four, and twenty-four hours by means of plate cultures inoculated with three loopfuls of the fluids. The results obtained are very distinct. Thus in one case before

alcohol the serum in various dilution gave innumerable colonies when plated after twenty-four hours' incubation. After taking $\frac{1}{2}$ -ounce doses of alcohol every four hours for six days the growth of colonies was so reduced that they became countable. Five drachms of alcohol every three hours were given for six days, and then for seven days the dose was raised to six drachms every three hours. The blood serum was then tested, and it was found that the growths after twenty-four hours' incubation were all sterile, using the same dilutions of serum as before. A further set of investigations indicate that this increase in bacteriolytic power is produced to some extent at least by an increase in complement.

Two Italian observers³ have also examined the effect of alcohol on the blood. Mircolo and Gervino find that the blood of alcoholics possesses the power of neutralising the **Toxins of Tubercle**, provided that the alcoholism has not reached a stage in which there is destruction of the tissues. Further, animals which have received alcohol with their food show greater power of resisting the injection of tubercle bacilli than tuberculin injections. There are great changes in the blood after alcohol, depending upon a diminution in the coagulating power and an increase of hæmolysis. The same changes under certain circumstances can arise in patients suffering from tuberculosis. It is therefore evident that alcohol should not be used when there is a tendency to hæmoptysis, since it increases the hæmolysis.

REFERENCES.—¹*Centr. f. die ges. Therap.* April, 1903; ²*Therap. Gaz.* May, 1903; ³*Gaz. deg. Osped.* No. 44, 1903;

ALKALIES.

Brunton¹ states that **Toothache** in a carious tooth is frequently due to the presence of an acid, and can be at once removed by the local application of sodium bicarbonate on cotton wool. When pain is felt in all the teeth it often depends on irritation of the roots just at the edge of the gums by acid fluids in the mouth. The pain may generally be relieved by rubbing sodium bicarbonate along the edge of the gums, or by washing out the mouth thoroughly with a solution of baking soda in water. This solution should also be squirted between the teeth when there is caries which cannot be packed with the cotton wool, or the salt can be applied with a pointed match. Apparently diminished alkalinity of the blood may cause pain in the same way that direct application of acid to a nerve does. Thus while suffering from boils, Brunton noticed that the stinging pain was worst about three or four hours after a meal, just at the time when the

alkalinity of the blood is least. Large doses of sodium bicarbonate by the mouth relieved the pain. Similarly the application of a solution of bicarbonate to the boils gave relief. He thinks that a similar explanation may be true for the relief of neuralgia by taking meals. Instead of blood being drawn to the stomach and the local congestion relieved, it may be that the excretion of hydrochloric acid increases the alkalinity of the blood.

REFERENCE.—¹*Brit. Med. Jour.* Oct. 18, 1902.

ALKALINE WATERS.

Liebreich points out¹ that there are great differences between the natural alkaline waters and those prepared artificially by mixing the salts in the proportions obtained by analysis. Mere traces of elements may have been missed, or there may have been unavoidable inaccuracies in the weighing. Certain substances, such as carbon oxy-sulphide, cannot be added to the artificial waters without splitting up into CO_2 and H_2S . All natural waters contain on evaporation a gelatinous or colloidal substance called glairin. Of great interest is the fact that there are two varieties of carbonic acid, the anhydride CO_2 and the hydrate $\text{CO} \begin{smallmatrix} \text{OH.} \\ \text{OH.} \end{smallmatrix}$. In natural waters the hydrate exists, in artificial preparations the anhydride only; the latter escapes very rapidly, leaving the water flat and unpalatable.

REFERENCE.—¹*Brit. Med. Jour.* Oct. 11, 1902.

ANÆSTHESIA (Spinal).

Kozlowski¹ thinks that the vomiting, dyspnœa, and fever which follow the injection of an aqueous solution of cocaine into the spinal canal, are due to the irritating effect of the cocaine and water. Instead of cocaine he substitutes the non-irritating tropa-cocaine, while instead of water he uses cerebro-spinal fluid. His method is as follows: He weighs out .05 gram of dry, pulverized tropa-cocaine in a warm, dry, sterilized glass dish. The hypodermic needle is then introduced into the lumbar canal, and 5 c.c. of cerebro-spinal fluid is allowed to drop on to the tropa-cocaine. By agitating the dish the drug completely dissolves, and this 1 per cent solution is drawn up into the syringe and injected. He does not sterilize the tropa-cocaine. This method is easy, rapid, and causes no unpleasant symptoms. He considers that, following this plan, there is not much more danger than in making an ordinary lumbar puncture.

REFERENCE.—¹*Centr. f. Chir.* Nov. 8, 1903; *Therap. Gaz.* No. 4 1903.

ANÆSTHIN.

This drug is the ethyl-ester of paraamido-benzoic acid. Almost entirely insoluble in water, it is soluble in olive oil. Von Noorden¹ found that the substance, whether applied as a powder, a salve, or in oily solution, had marked **Anæsthetic** properties in irritated conditions of the larynx, pharynx, stomach, and intestine, and in itching and painful **Skin Diseases**. Other observers² confirm these claims. Thus Chevalier³ finds anæsthin is similar to but less toxic than orthoform. In the form of an oily solution he has used it as a local anæsthetic for small surgical operations. In nervous dyspepsia and ulceration of the stomach $\frac{1}{2}$ to 1 grain gives more lasting relief than orthoform. Becker⁴ finds the oily injection inconvenient, as ligatures are apt to slip. He prefers another compound of anæsthin, in which the introduction of a sulpho-group lessens the irritation and makes it soluble in water. To this compound the name **Subcutin** has been given. It is of very slight toxicity. Dogs take up to 90 grains without any ill effect, while the injection of 21 grains per kilo of body weight caused only transient intoxication symptoms in rabbits. A $\frac{1}{2}$ to 1 per cent solution in water proved strongly anæsthetic, and Becker has employed the new drug instead of cocaine in Schleich's anæsthetic mixtures. The formula employed was subcutin 0.8-1.0 gm., sodii chlor. 0.7 gm., aq. dest. 100. This solution is isotonic with the fluids of the tissues. This strength proved suitable for a variety of surgical operations, varying from disarticulation of fingers and toes to resection of ribs. Owing to the low toxicity of subcutin, it is likely to prove very useful for anæsthetising the bladder.

REFERENCES.—¹*Berlin klin. Woch.* No. 17, 1902; ²*Ibid.*; *Münch. Med. Woch.* No. 39, 1902; ³*Rev. d. Thérap.* Dec. 1902; ⁴*Münch. Med. Woch.* No. 20, 1903.

ARGYROL.

Barnes¹ states that this salt is chemically silver vitellin, and is distinguished by its high amount of silver, its easy solubility, its great penetrative power, and its freedom from irritating properties. A 20 per cent solution of argyrol corresponds to a 10 per cent solution of silver nitrate, and can be dropped in the eye without causing irritation or discomfort. For **Purulent Ophthalmia** a 25 per cent solution is the proper strength. **Ophthalmia Neonatorum** will be cured by it in two or three days if instilled every three or four hours. For **Gonorrhœal Ophthalmia** a 25 to 50 per cent solution should be employed. For **Catarrhal**

Conjunctivitis 5 to 10 per cent is sufficient. It has been used in catarrhal manifestations of the nasal mucous membrane. For **Laryngitis** solutions of 10–30 per cent are suitable. In genito-urinary practice an injection of 2 to 5 per cent can be used in **Gonorrhœa** three or four times daily. When the whole urethra is involved, irrigation with a 1–1000 solution may be employed.

REFERENCE.—¹*Canad. Jour. of Med. and Surg.* Nov. 1902.

ARSENIC.

Fraser¹ finds **Arrhenal**, disodic-methyl-arseniate, an inert substance. He has given as much as 207 grains in forty-five days, representing 70·5 grs. of arsenium, or enough arsenic to kill forty-five people, without producing any toxic action except a slight alliaceous odour in the breath. Similarly, to a girl suffering from chorea, 101 grs., equal to 45·4 grs. arsenious acid, was given in 21 days without any toxic or therapeutic action. On the other hand the same case was cured by increasing doses of liquor arsenicalis. Fraser shows that arrhenal is an inert compound, because it is so stable that it cannot be broken up by the tissues. Consequently Marsh's test fails to reveal arsenic after enormous doses of arrhenal. When the urine was evaporated and oxidised with strong sulphuric and nitric acids, a dense film of arsenicum was got with Marsh's test. Arrhenal is rapidly eliminated, and does not remain long in the system.

Schild² has employed successfully a new arsenical preparation called **Atoxyl**. It contains 37 per cent of arsenic, but its toxicity is only one fortieth of a similar amount of arsenic. Since small amounts given by the mouth readily produce gastric disturbance, Schild gives the drug hypodermically, beginning with two-thirds of a drop of a 20 per cent solution. The dose is gradually raised till it reaches five times that quantity. Favourable results were obtained in **Psoriasis**, **Lichen ruber**, and other chronic dermatoses. Of fourteen cases of lichen ruber, thirteen recovered under atoxyl. The average duration of treatment was forty-five days.

Stockman³ has pointed out how extremely rare it is for arsenic in medicinal doses to cause serious toxic symptoms. The amount of arsenic absorbed in poisoned beer must frequently have been less than that given therapeutically with impunity. The symptoms were not caused by the alcohol, since alcohol does not produce emaciation, anæmia and pigmentation. Possibly the arsenic along with beer or wine proves a more toxic compound than the ordinary preparations. Stockman does not believe

that arsenic is a hæmatinic. Careful experiments have shown that there is no increase of red corpuscles under arsenic, though under long continued small doses the bone-marrow becomes altered, the fat becoming absorbed, while there is a great increase in the blood-vessels and in the number of leucoblastic cells. The erythroblastic tissue was not much altered. When arsenic is pushed anæmia results, and the bone-marrow becomes markedly degenerated, presenting all changes from mere increase of vascularity to mucoid degeneration. These degenerations were seen in cases from the Manchester beer epidemic.

Pope⁴ finds arsenic in increasing doses very efficacious in **Chorea**. He does not give arsenic in all cases. It is inadvisable in very acute cases with coma or paralysis, when the rheumatic process is going on in an acute form, or in cases of advanced cardiac disease, or those who have been treated with arsenic in small doses for some time. Further, there are cases of intolerance of the drug and personal idiosyncrasy.

For the use of arsenic Pope lays down the following rules : (1) See that the tongue is clean ; (2) Put the patient on a bland, easily digested diet ; (3) Use the drug in a much diluted form and in the same dilution throughout ; (4) Starting with $2\frac{1}{2}$ mms. of Fowler's solution to the ounce of water, thrice daily, give two ounces of the same strength next day ; three ounces the day after, and so on as long as no unpleasant symptoms occur. Small doses may be given after meals, large doses during meals. In adults the initial dose may be two or three ounces of the mixture thrice daily. Do not discontinue at the first attack of vomiting ; (5) Increase the dose daily by $2\frac{1}{2}$ minims of liq. arsenicalis. Keep the patient in bed during the treatment ; (7) If vomiting persists, discontinue the drug for twenty-four hours and then resume with the same dose ; (8) Examine daily for toxic symptoms. Pope aims at a shock action on the nervous system, *i.e.*, to get the greatest immediate effect with the least risk of doing permanent injury. Improvement is usually noted in the course of three or four days, and the movements have either disappeared at the end of eight days, or have become very trifling.

Wild⁵ finds women stand arsenic worse than men. The best vehicle to avoid gastro-intestinal irritation is diluting the drug well with an albuminous, colloid, or saccharine solution. While liquid extract of liquorice and compound infusion of gentian are very good, the best vehicles are half a pint of milk or half a pint of beer.

Kinsman⁶ reports a case of arsenical neuritis in a girl of sixteen, who, for violent chorea, received in thirty-six days, 952 drops of Fowler's solution, or rather more than a fifth of a grain of arsenic daily. The chorea was cured, but both hands and feet became paralysed. The paralysis began at the periphery, all forms of sensation were intact, and there was no tenderness of the nerve trunks. The paralysis continued for months, and may have become permanent.

Jesionek⁷ employs Ziemssen's solution for hypodermic use. One grain of arsenious acid is boiled with 5 c.c. of normal sodium hydrate till completely dissolved. This is then diluted to 100 c.c. and filtered. It is then put into small bottles holding 2 c.c. which are closed with cotton-wool plugs, and sterilised with steam to avoid risk of growths. Injected into muscle this solution is not irritating. At first $\frac{1}{2}$ c.c. is given, and rapidly is increased to 1 c.c., the injection being made every other day. The quantity of arsenic required when given in this fashion is much less than when given by the mouth, and the action is rapid and sure while the application is easy.

REFERENCES.—¹*Scott. Med. Jour.* March, 1903; ²*Berlin klin. Woch.* No. 13, 1902; ³*Brit. Med. Jour.* Oct. 18, 1902; ⁴*Ibid.*; ⁵*Ibid.*; ⁶*Clev. Med. Jour.* March, 1902; ⁷*Münch. Med. Woch.* July 29, 1902.

ASPIRIN.

Georges¹ after two years' experience thinks aspirin preferable to sodium salicylate. It is acetyl-salicylic acid, and in presence of weak alkalies is split up into its two constituents. It is unaltered by acids. Georges has only seen vomiting in a few cases, and only twice has there been complaint of ringing in the ears and deafness. The drug is of great value in all forms of **Rheumatism**, whether of joints, heart, or muscles. He gives $7\frac{1}{2}$ grs. thrice daily to children between two and five years of age, and 15 grs. to older children. Aspirin is very useful in **Chorea**, shortening the attack. He interrupts the treatment every five days for three days.

Hill² points out that aspirin is insoluble in water and incompatible with alkalies. It is best administered in powder or in capsules. He has experimentally found out that, using the ferric chloride reaction in the urine as an indicator, there is practically no difference in the rate of absorption when aspirin is given in powder or in capsule.

Franke³ reports intoxication symptoms which occurred to himself on taking 15 grs. of aspirin after a supper of liver, sausage,

and tinned fish. Within fifteen minutes his lips began to swell, and he had difficulty in swallowing. The swelling spread over the whole face and the pulse rose to 60. Under the application of ice bags the swelling diminished, but a copious eruption, urticarial and itchy, broke out over the whole body. There was then rapid improvement, and within two hours of the commencement of intoxication all the symptoms had disappeared except slight swelling of the lips and face. Franke thinks that he can definitely say that the intoxication was not due to the meat or fish, since two other people partook of them without any symptom. He thinks that in the stomach decomposition of the aspirin must have taken place, and that a new toxic phenol product was liberated and immediately absorbed. Examination of the urine revealed the presence of large amounts of phenol.

Otto and Mayer⁴ have recently reported somewhat similar symptoms after the use of aspirin, viz., œdematous swelling of the face, especially of the eyelids and scalp.

REFERENCES.—¹*Berlin klin. Woch.* Aug. 11, 1902; *Brit. Med. Jour.* Oct. 4, 1902; ²*Therap. Gaz.* Dec. 1902; ³*Münch. Med. Woch.* July 28, 1903; ⁴*Deut. Med. Woch.* 123 and 124, 1903.

BILBERRY, (*Vaccinium Myrtillus*).

Bernstein¹ finds that the bilberry fruit in the form of infusion, extract, syrup, or jam, is an astringent and antifermentive. A decoction of the dried berries, the weight of the liquid being equal to the material employed, killed the bacillus typhosus within twenty-four to forty-eight hours, while the bacillus coli communis succumbed within twenty-four hours. To eliminate the possibility of the action being due to malic and limonic acids, the experiment was repeated with a decoction neutralised with sodium bicarbonate. The results were striking, the bacillus typhosus, Gärtner's bacillus, the cholera vibrio, and one kind of bacillus coli communis were killed within twenty-four hours. The berries are non-poisonous, have a pleasant fragrant taste, and can be readily mixed with mineral water, tea, milk, custard, or cream. Their action is not interfered with either by the acid stomach or alkaline intestine. In **Typhoid**, by preventing fermentation, they will reduce the risk of perforation. He finds the bilberry very useful in chronic **Dysentery**.

Sawyer² shows that the bilberry was mentioned in old herbal books as an excellent astringent and antiscorbutic.

[See also *Medical Annual*, 1893, p. 57. It is stated that quinic acid can be extracted from the leaves, and that a

concentrated decoction gives good results in leucoplakia buccalis. —EDITOR.]

REFERENCES.—¹*Brit. Med. Jour.*, Feb. 7, 1902; ²*Brit. Med. Jour.*, Feb. 28, 1903.

BROMIDES.

The bromides¹ are administered far too frequently, and with a lamentable want of appreciation. The toxic effects are frequently not recognised. Acute bromism is by no means rare in asylums. The usual symptoms are marked and persistent somnolence, mental depression, sluggishness of the mental processes, insensibility of the mucous membranes, abolition of sexual functions and deep reflexes, a fœtid breath, muscular weakness, dilated irresponsive pupils, ptoses, and general cachexia. In most pronounced cases the somnolence becomes stupor, the circulation is markedly depressed, and respiration is diminished in frequency. There may be troublesome skin eruptions. Susceptibility is very variable, depending to a considerable extent on the eliminatory functions. There is probably no drug so misused as bromide. The indication for its use should be found in the mental disturbance characterised by nervous tension and excitability of the motor centres.

Chapin² states that during ten years eighteen cases have been admitted to the Pennsylvania Hospital for the Insane, suffering from excessive **Hypnotic Drug Medication**. All had suffered from nervous or mental symptoms rendering certification necessary, and erroneous diagnosis of paresis, ataxia, softening, dementia, meningitis, sclerosis, had been made. The nervous symptoms had been masked and obscured by the excessive doses of sedatives. Many symptoms, as inco-ordination, speech disturbance, delirium, hallucination, mental hebetude and dulness simulating dementia, may be produced by such sedative drugs. The presence of acne, ashen shade of the skin, enlarged, pale, heavily coated tongue, the feeble action of the heart, dull eye and abnormal pupil, should arouse suspicion.

Spratling³ is of opinion that bromides are given in larger doses than is required. In epilepsy begin with small doses of 10 to 15 grs three times daily, and watch their effects closely. If well borne, but without any effect in diminishing the frequency and severity of the fits, the dose may be increased to 20–25 grs.

REFERENCES.—¹*Med. Press*, March 11, 1903; ²*Therap. Gaz.*, June, 1903; ³*Ibid.*

CANTHARIDIN.

Liebreich¹ prefers cantharidin to the ordinary tincture of cantharides, as the latter varies in composition. He uses the active principle dissolved in tincture of orange peel, .2 grms. to 1000 c.c. The dose is as a rule 0.5 c.c. never more than 0.75, and should be given largely diluted with water. The effect of cantharidin is on the capillaries. The nutrient fluids pass more readily to the cells. Thus, lupus patches become red and swollen, while from open wounds there is an exudation of serum. Liebreich has seen many cases of **Lupus** cured by cantharidin, though cases of long standing can only be improved. Cantharidin also enables drugs to pass through the capillary walls more readily, as for example iodine and mercury. Cases of severe **Syphilis** unaltered by mercury ointment, rapidly cured when cantharidin and mercury ointment were used jointly. Similarly for iodide of potassium in chronic skin affections. Great care must be used in measuring the dose of cantharidin, and the urine must be carefully watched.

REFERENCE.—¹*Brit. Med. Jour.*, Oct. 18, 1902.

CHIELIN.

This is a non-poisonous substance obtained from the roots of tulips. In the form of a cream or soap it is useful in chronic scaly eczema, but is not good in the vesicular and pustular forms. It seems to have a specific effect on the **Sebaceous Glands**, and is excellent in seborrhœa, acne vulgaris, and comedones. Heymann¹ recommends the drug on account of its non-poisonous properties, pleasant odour, and cleanliness.

REFERENCE.—¹*Deut. Med. Woch.*, Aug. 14, 1902, *Brit. Med. Jour.*, Nov. 22, 1902.

CINNAMATE OF SODIUM.

Batty Shaw¹ finds that this drug causes a general leucocytosis after intravenous injection. This does not depend on depriving the blood of fluid, but on stimulating the simpler lymphocytes to transformation into polymorphonuclear cells and intermediate cells.

Drage² uses for purposes of subcutaneous injection a 10 per cent solution of sodium cinnamate in glycerin. He has used this in doses of 30 mins. in some cases of **Tuberculosis** and **Cancer**.

REFERENCES.—¹*Jour. Path. & Bact.*, vol. viii; ²*Brit. Med. Jour.*, July 12, 1902.

CREOSOTE.

Van Zandt¹ has analysed the effects of creosote in 1130 cases of **Pneumonia** collected from seventy-five sources. Of these only 56 died, representing a mortality of less than 5 per cent. Many of the writers hold that creosote can abort pneumonia, while almost all reporters state that the drug modifies the course of the disease.

REFERENCE.—¹*Med. Rec.*, Oct. 18, 1902.

CRYOGENINE.

This name is given to an aromatic substance isolated and prepared by Messrs. Lumière. It is an antipyretic which has been specially recommended by French observers for the **Pyrexia of Phthisis**. Gram doses given to healthy people were found to have little action. Given to febrile patients, Dumarest¹ found a rapid fall of 1°, 1·5°, and even 2° C with doses of 0·6–1·2 gram. The effect often persisted to the next day. In several cases continued administration did not cause ill effects or require increase of dosage. The drug has no anodyne action. None of the patients taking cryogenine suffered from cyanosis, collapse, or excessive sweating. In tubercular cases the amelioration was greatest in secondary inflammatory fever, the fever of caseation, and hectic fever. It was less when the fever was due to patches of congestion, and often had no effect in the continued fever of tuberculous disease.

Rousseau² also recommends the drug as a safe antipyretic in phthisical cases, as it can be given for long periods without causing inconvenience. It is cumulative in its action, but does not produce toxic effects. The best method of administration is to give a large dose of 1 grm., followed next day by 0·8 grm., diminishing daily by 0·2 grm. till the dose reaches 0·2 grm. Given thus the antipyretic effect is obtained from the first, whereas if smaller doses of 0·3 gr. be given, the antipyretic effect takes two or three days to develop. After a large dose of 1 grm., the temperature begins to fall in half an hour, and the maximum fall occurs in four hours. The urine becomes red or green with Fehling's solution.

¹*Lyon. Méd.*, Nov. 23, 1902; ²*Gaz. des Hôp.*, July 2, 1903; ³*Lyon Méd.*, Dec. 17, 1902; ⁴*L'Écho Méd. du Nord*, March 15, 1903.

DORMIOL.

Dormiol is a combination of amylene hydrate and chloral hydrate, which is said not to affect the heart and circulation.

In 11 cases of **Epilepsy** in which Hoppe¹ tried it the results were excellent. The majority of the cases were due to organic cerebral lesions. He gave the drug in the form of rectal enemata containing 38 to 46 grs. in 8½–12 oz. The attacks were shortened considerably, lasting only fifteen to thirty minutes, instead of several hours as on previous occasions. Hoppe does not consider dormiol a good substitute for bromides in the general treatment of epilepsy. He found it, however, an excellent hypnotic in certain forms of **Sleeplessness** combined with great restlessness. In such cases he gives it in doses of 15 grains.

REFERENCES.—¹*Münch. Med. Woch.*, April 29, 1902; *Brit. Med. Jour.*, July 12, 1902.

ECTOGEN. (See "Peroxides.")

ERGOT.

Livinstone¹ strongly recommends the hypodermic use of ergot in cases of **Disordered Circulation**. Its most important therapeutical property is its power of restoring equilibrium and tone to the circulation. For **Headache** he finds it the best remedy. In opium and narcotic poisoning generally, its effect is most beneficial. The same is true for drug habits and acute alcoholism, hysteria, and hystero-epilepsy. In acute inflammatory infections such as meningitis, pneumonia, pericarditis, erythema, and erysipelas, he used it largely. He considers ergot more valuable in heart affections than the ordinary heart tonics. In surgical operations the preliminary injection of ergot tended to prevent shock. In all cases he administers ergot only hypodermically. The action when it is given by the mouth is unreliable. The best formula is as follows: Dissolve one drachm of Squibb's extract of ergot in an ounce of water containing 1 to 3 parts of formaldehyde per thousand. Sterilise the water by boiling, and add the antiseptic before dissolving the drug. The solution should be filtered and kept for a few days before being used. The minimum effective dose for an adult is 15 minims, but frequently 30 minims were required. For headache 15 minims were usually sufficient. The largest quantity he has given in twenty-four hours is 150 minims (= 30 grs. of the solid extract). The injections are made into the left deltoid, and cause some congestion and soreness. They should be given slowly. Other observers, Wiggin and Toms, confirm these claims. Toms found ergot beneficial in œdema of the lungs and purpura. Phelps and Ford have used ergot in arterio-sclerosis and weak

heart. Lambert has used it in 10 cases of serous apoplexy in alcoholics, and 7 of these recovered. Ergot greatly relieved the tremor and dilapidation of alcoholics. He finds it very useful in pulmonary œdema. He gives the drug only hypodermically.

REFERENCE.—¹*New York Co. Med. Assoc.*, March 16, 1903.

ERYTHROPHLÆUM.

Wilcox¹ using the tincture of sassy bark in 10 minim doses, finds it more active in **Slowing the Heart** than digitalis, but it is more irritating to the stomach and more disagreeable in taste. The vaso-constrictor effect is greater, and it is less cumulative. It acts rather on the inhibitory than on the muscular apparatus. Digitalis is more reliable in its action. Sassy bark should be restricted to fairly competent hearts with low vascular tension, and to cases where digitalis has failed or lost its action.

REFERENCE.—¹*Amer. Med.*, June 27, 1903.

ETHER.

Witzel¹ has worked out a *drop method* of using ether as an anæsthetic. He gives one hour before the operation an injection of $\frac{1}{6}$ to $\frac{1}{2}$ grain morphia (according to Berndt² this is unnecessary). The patient is told to count slowly backwards from 200, and is directed to take a deep breath after every second number. After the counting has gone on for a short time, the ether is very slowly dropped on to an ordinary mask. When a certain degree of narcosis has been obtained (in 10 to 15 minutes) a few drops of chloroform are given to put the patient thoroughly under. As soon as the corneal reflex disappears the chloroform is stopped and ether is resumed. If at any time during the operation a particularly painful manipulation causes the patient to become restless, a few drops of chloroform may be given. During the whole time the head should be kept very low, hanging over the end of the table. After coming out of the narcosis, systematic deep breathing should be practised for a few minutes every hour. Both authors praise the method. It requires little ether and almost never causes initial excitement. The patient comes out of the sleep very quickly, and does not suffer from vomiting or lung troubles. The kidneys are not affected, and the patients rapidly recover their appetite.

REFERENCES.—¹*Münch. Med. Woch.*, No. 48, 1902; ²*Ibid*, No. 20, 1903.

FORMALDEHYDE.

This drug¹ has recently been used with some success in cases of **Septicæmia** and **Ulcerated Endocarditis**. (See "**Septicæmia**," in **DICTIONARY OF TREATMENT**.)

Intravenous formalin injections are said to have cured a case of **Rabies**.¹ A rapid fall of temperature and improvement in all the symptoms followed the administration of the drug.

The health department of Chicago² recommend the inhalation of the *vapour* of formalin in **Whooping Cough**. The conclusion reached is that by the proper inhalation of the vapour it is possible to destroy the germs of whooping cough, whether existing in the mucous membrane or in the surroundings of the patient. The disease is cut short and further infection avoided. In accordance with these experiences it seems advisable that schools, churches, and hospitals should be thoroughly disinfected from time to time.

Formaldehyde steam has a very vigorous disinfecting action. Herzog³ found that the spores of *bacillus mesentericus*, which resist the action of steam for over 145 minutes, were killed in the vapour arising from a 0.1 per cent solution of formaldehyde in ten to fifteen minutes. The best results are obtained when the objects to be disinfected are put in the same apparatus where the formaldehyde steam is generated.

For **Inoperable Cancers** Powell⁴ used a 2 per cent solution of formalin (1 part commercial formalin to 19 parts water). Compresses moistened with this solution are applied to the ulcerated tumour and prevented from evaporating. They are renewed every six hours. In one or two days the suppuration ceases, and in twelve to sixteen days the ulcer clears and a granulating surface is presented which heals from the edges. The method is not painful.

REFERENCES.—¹*Med. Rec.* March 14, 1903; ²*Bull. Health Dept. Chic.* Feb. 7, 1903; ³*Cent. f. Bakter. Paras. und Infekt.* No. 2, 1903; ⁴*Brit. Med. Jour.* May 30, 1903.

GELATIN.

Pribram¹ has used gelatin injections for hæmorrhage in **Typhoid Fever**. He gives 20 c.c. of a sterilized 10–15 per cent solution. He finds that by this treatment the severity and duration of the bleeding are diminished.

Dieulafoy² has had a case of **Tetanus** after the use of subcutaneous injection of gelatin solution. He has been able to collect twenty-three cases within the last two years, in which

tetanus has occurred after gelatin injections, so that this treatment is by no means free from risk.

REFERENCES.—¹*Prag. Med. Woch.*, No. 20, 1903; ²*Bull. Acad. Méd.*, No. 19, 1903.

HEDONAL.

Hills,¹ after a considerable experience, is convinced that hedonal has a **Hypnotic** value rather greater than sulphonal or trional. Its effect is not so long continued as with chloral or paraldehyde, but it is safer in its action than these. Devoid of ill effects, safe in the presence of valvular disease, it brings on sleep within an hour, and the sleep lasts from four to eight hours. Its field of usefulness is in melancholia, neurasthenia, hypochondriasis, and cases without great mental or motor excitement. In maniacal cases (except in chronic and subacute forms) it does not produce hypnosis. There does not seem to be any cumulative tendency, as the drug is rapidly eliminated from the body. The gastric, respiratory, and cardiac functions are not disturbed. The best form of administration is either in wafers, or as dry powder placed on the tongue and washed down with water. The dose varies from 15 to 40 grs., the best action being obtained with doses of 20–30 grs.

REFERENCE.—¹*Therap. Gaz.*, March, 1903.

HELMITOL.

Heuss¹ claims that helmitol is a more valuable **Urinary Antiseptic** than urotropin, as its action is more powerful and lasts longer. It also possesses marked sedative properties. Its action depends on the liberation of formaldehyde. Heuss uses doses of 1 gram dissolved in a glass of water thrice daily. He has given 8 grams in the day without causing any unpleasant effect except a slight tendency to diarrhoea. Of 16 cases of old-standing cystitis, 11 were completely cured, while only two were not improved. A case of **Bacteriuria** which had resisted treatment for years, cured in three weeks under helmitol.

Rosenthal² also speaks favourably of this compound. He finds that it gives a very definite formaldehyde reaction in the urine one hour after being swallowed. This reaction ceases within five hours. The drug was very successful in cystitis, gonorrhoea, and chronic prostatitis. It caused no unpleasant gastric symptoms, and does not irritate the kidneys or cause albuminuria.

REFERENCES.—¹*Monats. f. Pract. Derm.*, Jan., 1903; ²*Ther. d. Gegen.*, Dec. 1902; *Treatment*, Feb., 1903.

HOPOGAN. (*See* "Peroxides.")

HYPODERMOCLYSIS.

Karlinski¹ has found that the injection of 1000–1250 c.c. of physiological salt solution is the best treatment for **Relapsing Fever**. This amount is injected two or three days after the temperature has come down to normal, and effectually prevents a relapse.

In a very severe case of **Osteomyelitis** with depression, collapse, profuse diarrhœa, erythematous and hæmorrhagic eruptions, and infection of the blood,² hypodermoclysis gave brilliant results. Two injections of 500 cms. were given hypodermically in twenty-four hours. Next day a further quantity was injected, and there was a slight remission of fever and the depression was less. A fourth injection upon the next day was followed by marked improvement, and gradual disappearance of the symptoms of general infection.

Gaspero³ states that the sedative effect of certain remedies, such as duboisine, hyoscine, bromides, etc., is greatly increased when these drugs are given hypodermically dissolved in 400 c.c. of normal saline solution. The organism is by this means relieved of a considerable amount of the products of auto-intoxication. With this method a dose of 4 decimilligrams of duboisine sulphate and 3 decimilligrams of hyoscine gives as strong an action as that obtained from double these doses administered without the serum. One gram of sodium bromide dissolved in the normal salt solution gives a lasting sedative action.

Ercklantz⁴ ascribes the good effects of normal saline injections in various forms of poisoning to the dilution of the circulating poisons. Thus in uræmia, even if diuresis does not follow the effect of the injection is good.

Henry,⁵ as the result of several years' experience, warmly recommends the use of hypodermoclysis in severe cases of **Lobar Pneumonia**. He does not consider it necessary to combine blood-letting with the saline injections, since they neither raise the blood-pressure nor embarrass the right heart.

Hypodermoclysis with Hydrogen Peroxide.—Campanella⁶ recommends hypodermoclysis with hydrogen peroxide in the treatment of asphyxia. By experiments on animals experimentally **Asphyxiated**, he has proved that the animals treated with H_2O_2 , repeated at intervals of five minutes till 50 c.c. in all

were used, recovered, while without the injections the animals succumbed within a short time.

REFERENCES.—¹*Wien. klin. Woch.* No. 15, 1903; ²*Gaz. Osped.* May 31, 1903; ³*Therap. des Gegen.* Sept. 1902; ⁴*Ibid.* Jan. 1903; ⁵*Phil. Med. Jour.*; ⁶*Gaz. deg. Osped.* Nov. 23, 1903.

INTRAVENOUS MEDICATION.

Mendel¹ says the technique is easy. The needle is sterilized by boiling in a test-tube for three minutes, the injecting syringe, made entirely of glass, being also sterilized. The drug solution is then drawn up into the syringe. The skin is carefully disinfected. To render the vein more prominent, a slight pressure by an elastic tube or bandage is exerted on the upper arm, the vein is steadied by the thumb of the left hand, and the needle introduced horizontally into the vessel. To see if the point is in the vessel, draw out the piston, and if blood is sucked up the fluid is slowly injected into the vein. Care should be taken to avoid injuring the opposite wall. For injecting purposes only such solutions are permissible as do not coagulate albumen or injure the vessel wall, as this may cause necrosis with resulting thrombosis. Several arsenic preparations are usefully given in this way, notably atoxyl. About one grain is injected in a 15 per cent solution. This is rapidly increased to $3\frac{1}{2}$ or $4\frac{1}{2}$ grs. At first injections are made every second day during the first four weeks, then two injections only each week, and finally only one a week. Mendel has obtained excellent results by this plan in **Chlorosis**, **Neurasthenia**, **Hysteria**, **Exophthalmic Goitre**, and in a variety of **Tuberculous** affections. It is also useful in **Skin Diseases**. In **Tuberculosis** a great deal can be done by combining arsenic and tuberculin treatment. The intravenous use of tuberculin produces a small general and a marked local reaction. Starting with $\frac{1}{2}$ mg. tuberculin and ordinary doses of atoxyl, he injects atoxyl alone every second day from three to five times according to the reaction, and then gives a combined injection, using this time 1 mg. of tuberculin. He proceeds in this way till 5 mg. is reached. He publishes some satisfactory results with the treatment. For **Syphilis** he uses **Sublamin** instead of mercury perchloride. Sublamin is best given intramuscularly, as intravenous use is apt to cause thrombosis. The drug is rapidly absorbed from the muscular tissue. On the other hand Shaw² using intravenous injections of chinosol, guaiacol, and formalin, on animals infected with bacillus pyocyaneus, found that the injected animals died sooner than the controls infected

with the same bacillus, and in every case the organism could be cultivated from the heart blood. Even formalin, in such large doses as to have rendered the blood a 1-1500 solution of formalin, had no preservative effect, and evidently the drug is so rapidly absorbed by the tissues that no action can be hoped for in septicæmia. Similarly the injection of formalin in rabbits infected with tuberculosis had no curative effect, and in one case directly caused death, owing to the free passage of the formalin through the lungs being prevented by acute miliary tuberculosis.

REFERENCES.—¹*Therap. Monats.*, April, 1903; *Brit. Med. Jour.*, Aug. 8, 1903; ²*Jour. Hyg.*, April, 1903; *Brit. Med. Jour.*, Aug. 15, 1903.

IODOTHYRIN.

Roos¹ thinks that failures in treatment with thyroid preparations are due to using too large doses, and thus causing intoxication symptoms. He gives iodothyron in powder to adults in gram doses, not more than twice daily. Children get 0.3 to 0.5 grm. per day. With these doses he has reduced the size of goitres and prevented recurrences. In cretinism iodothyron had a remarkable effect. He has also used it with some success in **Arterio-Sclerosis**, where it appeared to decrease the symptoms and lower the blood-pressure.

REFERENCE.—¹*Münch. Med. Woch.*, Sept. 30, 1902.

IPECACUANHA.

Wild¹ suggests that instead of the unreliable galenical preparations, the pure alkaloidal salts should be employed. The two chief alkaloids, **Emetine** and **Cephaeline**, differ in their action, and are present in varying amounts in different specimens of ipecacuanha root. Hence even the new preparations of the B.P. which are standardised to contain definite amounts of total alkaloids, vary in activity. Wild has for the past seven years used the alkaloid salts, and finds that the hydrochloride and hydrobromide of emetine are stable salts, and of reliable action as expectorants, depressants, and emetics. The alkaloids are best given by the mouth, as they are very apt to cause local irritation hypodermically. The solutions keep well if protected from the light.

The salts of cephaeline are less suited for ordinary use, as it is a very powerful emetic, and it is very difficult to regulate the dose so as not to produce nausea and vomiting. At the same time the action on the respiration and pulse are less marked. The solutions of cephaeline also seem less stable. For clinical

purposes Wild uses a solution of emetine hydrobromide, in 20 per cent alcohol containing one grain to the ounce. The dose for adults is from 5 to 20 minims as an expectorant and depressant ; as an emetic 1 to 3 drs. There does not yet seem any special indication for the use of cephaeline.

Lowin² finds that both alkaloids irritate the mucous membranes and are cardiac poisons. Emetine affects the heart in a much smaller dose than cephaeline, altering the rate, while cephaeline affects rather the force of contraction and lowers the blood pressure. Both drugs cause the characteristic inflammation and ecchymosis of the intestine, but cephaeline has more action on the kidney. Emetine and cephaeline both act as emetics, but cephaeline is much more active, and emetine is chiefly valuable as an expectorant.

REFERENCES.—¹*Brit. Med. Jour.*, Sept. 6, 1902 ; ²*Arch. Internat. de Pharm.*, vol. xi, f. 1 & 2 ; *Brit. Med. Jour.*, May 23, 1903.

LACNANTHES TINCTORIA.

An investigation into the therapeutic activity of this drug was undertaken by Gardner, Spitta, and Latham.¹ Using a standardised extract, it was found that the chief constituent was a resin and a substance which, after the removal of the resin, is precipitated by lead acetate, and which is soluble in water. Lacnanthes is a powerful drug in small doses, killing guinea-pigs with symptoms of paralysis of the extremities. The effect of the drug is to hasten rather than delay the fatal termination of tuberculosis in animals.

REFERENCE.—¹*Lancet*, July 2, 1902.

LITHIUM.

Good,¹ from a series of experiments on cats, dogs, and rabbits, concludes that lithium is excreted into the saliva, stomach and bowel. The chief excretion is by the urine. Its presence can be demonstrated in the secretions within ten minutes of a hypodermic injection. Excretion is slow, and lithium has been detected twenty-three days after administration has been stopped. Whether given by the mouth or hypodermically, sooner or later fatal gastro-enteritis is set up, connected undoubtedly with the excretion of the metal through the intestinal wall. Lithium salts do not exercise any diuretic action which cannot be accounted for by their salt-action. They alkaline the urine, acting like other alkalis. Dilute solutions are not solvents for uric acids or urates.

REFERENCE.—¹*Amer. Jour. Med. Sci.*, No. 2, 1903.

LOCAL TREATMENT OF GENERAL DISEASES.

Bouchard, at the Medical Congress in Cairo, recommended the local use of drugs in general infections which tend to become localised. A man of 60 kilos taking 6 grms. of sodium salicylate, is receiving 10 c.grms. for each kilo of body weight. The soft parts of the joint, the real seat of the disease in acute rheumatism, will only weigh 50-100 grms., so that the amount which really cures the disease is some 5-10 milligrms. Yet to obtain this local action it was necessary to absorb 599 times this amount. Exceedingly minute amounts of sod. salicylate locally injected cure rheumatic arthritis. Bouchard has seen 3 c.grms. locally injected cut short an attack, while it is exceptional if the local injection of 10-20 c.grms. does not cure rheumatic arthritis. The effect is purely local, since one joint can thus be cured at will, while the remaining joints remain unaffected. The curative effect is not due simply to a local revulsive action, since it is obtained even if the solution used be isotonic with the blood serum. In respect that the cure is purely local, general treatment should be used as long as the acute stage continues. If it fails, local treatment may be tried. When past the progressive stage, and when the disease has become merely local, the local joint treatment may be of itself sufficient. Similarly the local injection of small amounts of sodium salicylate into the painful chest wall has cut short pleuritic and pericarditic attacks. The injection should be in immediate proximity to the affected structure, but not into the joints or serous cavities themselves. For the local treatment of syphilis, Bouchard has used the following formula with great success: biniod. of mercury 0.01 gm., pot. iod. 3 gm., aq. 100 cc., of this 2 cc. are injected locally.

LYSOFORM.

Tunncliffe and Hewlett¹ point out that lysoform is to be regarded as a formic aldehyde soap. The antiseptic action is due to the formaldehyde moiety. Lysoform is a colourless, viscid liquid, resembling glycerin. It is miscible with water in all proportions, and readily forms a lather. It has an agreeable odour. Even when used undiluted, lysoform produces no numbness, tingling, or subsequent roughening or peeling of the hands. It acts as a powerful deodoriser in the proportion of 1 to 100 or 200. Owing to its unirritating effect, it can be used as a 1-4 per cent gargle or for washing out mucous cavities. As regards germicidal action, lysoform in a 5 per cent solution

kills the typhoid bacillus in five to ten minutes, the bacillus coli in ten to twenty minutes, while staphylococci require over one hour. The toxic effect of lysoform is very limited, large doses given by the mouth causing vomiting, but not poisoning. Lysoform may be recommended as a non-irritating non-anæsthetic antiseptic, which, owing to its lather-forming properties, is specially indicated for skin disinfection.

Elsner² finds that lysoform is too weak in its action as a germicide. A 3 per cent solution of phenol kills pure cultures of staphylococci in five minutes, while 5 per cent lysoform requires one hour. In pus, lysol and lysoform in 5 per cent solutions are incapable of killing the staphylococci altogether, while 10 per cent solutions require two hours. He finds that the germicidal action of lysoform may be greatly increased by adding a little phenol to it. He has had prepared carbol. lysoform containing 1 part of crude carbolic acid to two of lysoform. The mixture is clear and free from the odour of phenol. A 3 per cent solution of carbol. lysoform is as active as a 3 per cent solution of pure phenol. Staphylococci dried on threads were killed in ten minutes by a 5 per cent solution. The toxicity of this solution is much less than one of pure phenol of corresponding germicidal strength.

REFERENCES.—¹*Med. Press*, Oct. 29, 1902; ²*Deut. Med. Woch.*, July 17, 1902; *Brit. Med. Jour.*, Dec. 20, 1902.

MESOTAN.

This preparation, the methyloxymethyl-ester of salicylic acid, is a clear, yellowish, mildly aromatic, oleaginous fluid. It mixes readily with other oils, and with ether, alcohol, and chloroform. It has been warmly advocated as a local application for **Rheumatic Affections**. Floret¹ was the first to write about the drug. He recommends it as an improvement on oil of gaultheria, which is objectionable to many patients on account of its powerful odour. Floret found that it was readily absorbed when painted or rubbed on the skin. Within a short time salicylic acid can be demonstrated in the urine. He obtained extremely good results with mesotan in acute muscular rheumatism and rheumatic lumbago. In acute rheumatic arthritis and in chronic joint affections of rheumatic origin, the drug was also excellent. It is also of use in allied diseases such as dry pleurisy and pericarditis, while it proved ineffectual in neuralgic pains and in cases of myocarditis with pains in the chest. So reliable was the effect, that Floret states that mesotan may

safely be used as a diagnostic means of discriminating between rheumatic and non-rheumatic affections, such as gonorrhœal, traumatic, or tubercular arthrites. It occasionally produces eczema, and for those with delicate skins is best used diluted with olive or almond oil. A mixture of equal parts is sufficient for ordinary cases. Only a small quantity need be rubbed in. Even for extensive areas a teaspoonful is enough, and two or three applications daily will suffice. It should be rubbed in gently over the affected area, and afterwards no covering is required. At first there is a slight burning or tickling sensation, but this soon stops and the pain subsides.

Roeder² confirms generally these statements. In forty-two cases of rheumatism of the muscles, joints, or fascia, the drug only failed twice. In subacute rheumatism and in chronic cases with creaking and swelling, the results were very good. In neuritis the drug had no effect. In two cases a universal urticarial dermatitis was produced. Roeder uses the drug mixed with equal parts of olive oil, in preference to the pure preparation. Rubeman,³ Meyer,⁴ Kropil,⁵ Liepelt,⁶ Posselt⁷ also praise the anti-rheumatic effect of the drug.

Frankenburger⁸ is the latest writer. In 40 carefully selected cases treated only with mesotan, he had 22 complete cures. In 9 others there was improvement as regards subjective sensations. In the remaining 9 cases the drug had no effect. The best results were obtained in acute muscular and arthritic rheumatism. In neuralgia the effect was negative, unless it was of rheumatic origin. In some cases of tubercular pleurisy and tuberculosis of the wrist joint, the drug relieved pain. Several times, though the mixture with oil was always employed, skin irritations were noted, and in one case a regular urticaria resulted. An objection to the drug is the relatively high price.

Kayser⁹ lays particular stress on the irritating properties of mesotan. He has had universal bullous formation in two cases. He lays down the rule that only the olive oil mixture should be used. It should be painted on, not rubbed in. Mesotan should not as a rule be continued for longer than one week, and must immediately be stopped as soon as there is lasting redness and swelling of the skin. If vesicular eruption take place, the abnormal susceptibility persists for many months, and a renewed application of mesotan may cause universal dermatitis.

REFERENCES.—¹*Deut. Med. Woch.*, No. 42, 1902; ²*Münch. Med.*

Woch., No. 50, 1902; ³*Deut. Med. Woch.*, No. 1, 1903; ⁴*All. med. Centr.*, No. 6, 1903; ⁵*Wien. Med. Press*, No. 13, 1903; ⁶*Berlin. klin. Woch.*, No. 16, 1903; ⁷*Deut. Med. Zeit.*, No. 21, 1903; *Münch. Med. Woch.*, No. 30, 1903; ⁹*Münch. Med. Woch.*, No. 32, 1903.

METHYLENE BLUE.

Methylene blue¹ acts as a bactericide and anæsthetic. It is very feebly toxic. It can be usefully employed in chronic **Sore Throats**. Powdered or in solution it hastens the healing of the ulcers in **Stomatitis** and rapidly relieves the pain. To remove the blue discoloration of the mucous membrane, gargles of eau de Labarraque (2 or 3 teaspoonfuls to the litre) should be used. In the concentration of 1-500 the preparation has been used with success in the treatment of **Conjunctivitis** and **Keratitis** in small-pox. For **Cystitis** capsules containing 3 grains can be given, or the bladder may be washed out with a 2 per cent solution. It is specially useful for cystitis not due to gonorrhœa. **Dysentery** has been successfully treated with rectal injection of 1-5000.

Moore and Allison,² comparing the action of methylene blue and quinine in **Malaria**, find methylene blue will destroy malarial parasites in many cases, but is less certain than quinine. It is most valuable in chronic cases, but has no advantage over quinine. The effects are usually more unpleasant than quinine. It is useful where there is a quinine idiosyncrasy. It is probably valuable in treating hæmaturic and hæmoglobinuric fevers on account of its diuretic action. On the whole quinine is quicker and more certain than methylene blue.

Gaudier³ warmly recommends the instillation of a warm solution of methylene blue (1-500) in certain forms of chronic **Suppurative Otitis Media** and in the fœtid otorrhœas of children. After syringing out the external auditory canal and the tympanic cavity with warm, soapy water, 15 to 20 drops of the methylene blue solution are slowly instilled into the ear. The procedure takes about five minutes, and during this time the patient should practice Valsalva's inflation two or three times in order to draw the fluid into the tympanic cavity. This method, combined with treatment of the primary retro-pharyngeal condition, cured seven out of nine cases of longstanding otitis media with large perforations and profuse fœtid discharge. The treatment takes from twenty-five to thirty days, and should be continued for several days after the discharge ceases.

REFERENCES.—¹*Jour. d. Pract.* xvii, No. 13; ²*Med. News*, Dec. 6, 1902; ³*Rev. Mens. d. Malad. d. l'Enfance*, March, 1903; *Amer. Jour Med. Sci.* Aug. 1903.

MORPHIA (Antitoxin for).

Hirschlaff claims¹ to have produced an antitoxin for morphia. He found that in acute poisoning three-fifths of the drug was excreted unchanged in the urine, in chronic poisoning only traces can be obtained in the fæces. This he thinks points to the fact that the immunity obtained depends less on increase of tolerance than on the development of new factors which alter morphia in the tissues. He treated rabbits for long periods with increasing doses of morphia, and found that their serum had then a certain immunising and antitoxic effect on mice against poisonous doses of the alkaloid. The protection was not very great; still, double the ordinary lethal dose could be recovered from. Hirschlaff suggested as a possible explanation of the action of the antitoxin that it enabled the nerve cells and their lecithin molecules to form an inert compound with morphia. To support this view, he performed a few experiments, which show that if morphia be rubbed up with a solution of fresh mouse brain, the toxicity of the centrifuged mixture is less than that of a solution of the same amount of morphia in water. Finally, he finds that boiling the brain solution prevents this effect.

Morgenroth² repeated the experiments of Hirschlaff, and is unable to substantiate his claims. He finds that the serum of immunised animals had no greater protective power than the serum of untreated animals.

REFERENCES.—¹*Berlin. klin. Woch.*, Dec. 8 & 15, 1902; ²*Ibid*, No. 21, 1903.

OVARIAN EXTRACTS.

In an important paper Jayle¹ reviews the whole question of ovarian extracts. He gets good results in the treatment of the **Symptoms following Castration**. The vaso-motor effects are specially relieved, but the nervous manifestations are little affected. Thus the neurasthenia is not removed, but the flushings are rapidly ameliorated. The remedy is somewhat uncertain in old women. An important point is to keep up the treatment for some time. It is necessary to continue a daily dose of 6 grains of ovarine for fifteen to thirty days before drawing any conclusion as to the value of the preparation. In the natural **Menopause** he has not had brilliant results. The improvement is incontestable, but is only transitory, and the treatment is very expensive. In **Ovaritis** the results have been very variable. In conditions of deficient ovarian functioning, shown by disorders of menstruation or vaso-motor and nervous

symptoms, ovarian treatment is frequently of greater effect than surgical interference. Where the insufficiency is primary and due to deficient development of the ovaries, medical treatment is distinctly indicated, and here the preference should be for ovarian preparations. But if the ovarian insufficiency is secondary to some other lesion, surgical intervention may be required in severe cases. In slighter cases ovarian administration is often quite sufficient. In various other conditions (exophthalmic goitre, excessive adiposity, etc.) ovarian tabloids are occasionally serviceable. As regards the mode of action of the drug, Jayle concludes that we are still completely in the dark.

REFERENCE.—¹*Rev. de Gynec.* No. 3, 1903.

PEROXIDES OF MAGNESIUM AND ZINC.

Under the names **Hopogan** and **Ectogan** two new peroxides have been put upon the market. They possess the power of generating, under certain conditions, either ozone or nascent oxygen. Hopogan contains from 15 to 30 per cent of peroxide of magnesium, MgO_2 , while ectogan contains 25 to 60 per cent of the peroxide of zinc, ZnO_2 . In contact with weak organic acids or bodies possessing acid properties these peroxides readily give off oxygen, and thus have considerable power as antiseptics and anti-fermentives. Hopogan is used for internal administration as a gastro-intestinal antiseptic, while in dermatological practice ectogan enables us to produce nascent oxygen at the site of the disease. For this purpose it is only necessary to apply to the moistened skin or wounded surface a mixture of dry powdered ectogan and an acid body. Similarly the two peroxides enable us to produce, at will, nascent iodine either for internal or external use. For the former all that is required is to mix the hopogan with a dilute solution of potassium or sodium iodide. The stomach contents are always sufficiently acid to liberate the iodine in a nascent condition.

Frenkel¹ gives a series of tables which enables the amount of iodine thus liberated to be readily calculated. For external purposes the mixture of ectogan, potassium iodide, and the acid substance is used. The best organic acid is tannin, but tartaric, citric, benzoic, and salicylic acids are also suitable, as well as substances possessing acid properties, such as thymol, alum, and potassium bitartrate.

REFERENCE.—¹*Le Prog. Méd.* April 4, 1903; *Ber. d. d. Pharm. Ges.* xxx; *Jour. d. Pharm. et de Chem.* No. 6, 1903.

PHENOL.

Nemtschenkoff¹ proposes to treat **Trachoma** by subconjunctival injections of a 5 per cent aqueous solution of phenol. The lower lid is everted and the needle is introduced into the conjunctiva at the spot where the swelling is most pronounced. A quarter of a syringeful is then injected very slowly, avoiding as much as possible causing excessive tension. The needle is then withdrawn, and a similar amount is injected at the outer angle of the eye. Finally the superior conjunctiva receives two similar injections at the inner and outer angles. These injections exert a very energetic action on trachoma, while the general tissues of the eye are spared, especially the epithelial layer of the cornea. The anæsthetic effect of the phenol is manifest, and local anæsthesia is not required. The method has the further advantage that only one attendance a week is necessary, and the avoidance of instillation and local application is a great relief to the patient.

REFERENCE.—¹*Théráp. Mod. Russ.* Nos. 7 and 8, 1902; *Bull. Gén. de Théráp.* July 8, 1903.

PHENOLPHTHALEIN (Purgen).

Tunncliffe¹ has discussed the synthetic purgatives. He shows that a number of purgative glucosides yield anthraquinone. Thus rhubarb, senna, aloes, yield anthraquinone, usually in the form of a methyl-hydroxy derivative. Phenolphthalein, a substance allied to anthraquinone, has also purgative properties. This was discovered accidentally. It was used as a means of distinguishing a certain wine, and it was then discovered that this wine caused diarrhœa. Phenolphthalein was then examined, and found to purge in small doses. It has been introduced on the market as "**Purgen.**" In the acid stomach purgen remains unchanged, in the alkaline contents of the intestine it probably forms the sodium compound, a very indiffusible salt of a high osmotic pressure, which leads to the accumulation in the bowel of much fluid. Purgen is only very slightly absorbed, and to that extent is excreted by the kidneys. It does not seem to split up in the tissues, since there is no increase of aromatic sulphates. Almost all the purgen is excreted unchanged in the fæces, which take on a brilliant purple colour in the presence of an alkali. Purgen is put up in tablets of three sizes, *viz.*, infant purgen, containing $\frac{3}{4}$ gr; adult purgen $1\frac{1}{2}$ gr.; strong purgen $7\frac{1}{2}$ grs.

Tunncliffe has tried the drug clinically. He finds that it is

readily taken by children, and one to three tablets of infant purgen is a useful aperient. The motion may be liquid, but there is never violent diarrhœa or colic. For ordinary adults one to three adult tablets are given. In cases of obstinate constipation the dose must be increased to one or two tablets of strong purgen. Purgen acts without the presence of bile, producing clay-coloured stools in jaundice. It does not irritate the kidneys even when diseased. Its depressing action on the circulation is less than that of magnesium sulphate.

Vamossy² shows the harmlessness of this compound by the fact that in several cases children have eaten a whole boxful without causing any more alarming symptoms than a brisk purgation.

REFERENCES.—¹*Brit. Med. Jour.*, Oct. 18, 1902; ²*Münch. Med. Woch.*, No. 26, 1903.

PICRIC ACID.

Picric acid in a saturated solution (1 in 95) is a coagulant and analgesic, acting as a simple and effective remedy in acute weeping eczema. It is not suitable if pus be actually present, as the pus, being confined, may lead to lymphangitis and abscess formation.

Milward¹ specially recommends picric acid for trivial cases of abrasions. For a paronychia affecting the root of the nail, a few threads of white gauze soaked in the saturated solution, pushed in with the head of a needle between the soft parts and the nail, is an excellent cure. It is a very useful application for soft corns, for hardening the ulcerated margin left by an ingrowing toe-nail, and for intertrigo of adults. The only drawback is the deep staining produced. When used it should be applied on well soaked lint covered by guttapercha tissue. This may be left on for twenty-four to forty-eight hours.

F. Re² recommends the drug as a powerful, speedy, and efficient antiseptic in **Gonorrhœa**. It does not irritate the mucous membrane or cause scarring, while it readily penetrates into the tissues and lymphatic spaces. He uses the drug in $\frac{1}{2}$ –2 per cent solution in water and glycerin, and as an ointment 1–2 per cent. The watery solution $\frac{1}{2}$ –1 per cent was used four times a day in acute cases. In two cases œdema of the penis with itching and burning followed the injection, but disappeared in a day. Cure took place within fifteen to twenty-five days.

REFERENCES.—¹*Brit. Med. Jour.*, Feb. 21, 1903; ²*Rif. Med.*, April 20, 1903; *Brit. Med. Jour.*, Aug. 1, 1903.

PURGATIN.

Anthrapurpurin is the first synthetic purgative that has been used clinically. Von Hoesslin has tried it and found it satisfactory. He uses doses of 0.5, 1, 1.5 and 2 grams, and finds that in mild cases of constipation the smaller doses may be sufficient, but as a rule 1.5 is required. The action is slow but certain. The motion is an easy one, and is generally formed, though soft or semi-solid. The patients liked the drug, and he has noted no unpleasant side effects. Only one motion is caused as a rule. The price is rather high. The action takes place in about 6½ hours, though in some cases it may be delayed and require twenty-four hours.

REFERENCE.—¹*Münch. Med. Woch.*, Aug. 12, 1902.

PURGATIVES, (Hypodermic).

Though the vegetable purgatives usually cause purgation when given intravenously or subcutaneously, they are too irritating to be used in this manner. Similarly, the drugs which act on the motor nerve-endings, such as pilocarpine, physostigmine and muscarine, are prohibited by the powerful actions they exert on other organs. Probably most is to be expected from members of the morphine series.

Dixon¹ shows that **Apocodeine** produces purging without vomiting. The subcutaneous use is followed within half an hour by purgation. This drug acts on the ganglia, since it is antagonised by nicotine. Apocodeine lowers blood pressure, producing vaso-dilatation, and increases peristaltic movements. It does not produce vomiting or other unpleasant ill effects. A 1-2 per cent solution of the hydrochloride should be used. Two or three c.c. (30-45 minims) may be injected for a dose.

REFERENCE.—¹*Brit. Med. Jour.*, Oct. 18, 1903.

PYROGALLIC ACID.

Wittmaack¹ recommends pyrogalllic acid as a substitute for lactic acid in the treatment of **Lupus** of the mucous membranes. Under cocaine the diseased tissue is removed with snare or curette as thoroughly as possible, if necessary in two or three sittings. If the bleeding is trifling, the pyrogalllic acid is applied immediately in the strength of 10 per cent, made up with vaselin. Then pieces of gauze smeared with the ointment are applied to the diseased patches, and the nose is stuffed round a celluloid catheter so that a moderate pressure is exerted on the mucous membrane. The application remains for twenty-four hours,

and is then renewed. After three or four days treatment the pyrogallie acid is stopped, and treatment with an indifferent ointment, such as boric acid ointment, is instituted for three or four days. The pyrogallie ointment is then recommenced. As a rule, from three to ten of such courses are required. This treatment is efficient, and does not cause the patient much pain. For the first two or three applications the nose may be cocaineised.

REFERENCES.—¹*Münch. Med. Woch.*, 1903, No. 31.

SCOPOLAMINE AND MORPHINE ANÆSTHESIA.

The retching and vomiting after chloroform and ether is of serious import in many abdominal operations. Among the many plans that have been suggested to avoid sickness is that of Schneiderlin, who recommended the preliminary injection of 0.03 grm. morphine and 0.0012 grm. scopolamine hydrobromide. Flatau¹ finds that the quantity of chloroform or ether required is then smaller, but in a series of 17 cases every one suffered from retching or sickness. Recently Schneiderlin² has modified his plan. By using repeated large doses of morphine and scopolamine he avoids the use of ether or chloroform altogether, and finds that the anæsthesia obtained is sufficient for all ordinary operations, while there is entire absence of after-sickness. Korff³ gives three injections of 0.01 grm. morphine and 0.0012 grm. scopolamine hydrobromide, at intervals of one to two hours. Flatau⁴ tried this method in a series of 30 cases. In twenty the anæsthesia was successful. In two cases the patients were so excited and struggled so violently that a little chloroform was required. In the other five cases there was restlessness, but the operation could be carried out without the aid of an anæsthetic. In no case did vomiting occur. The injections were made at 8, 10, and 11 o'clock. After the second injection sleep came on, but to produce the deep narcotic sleep suitable for operating, the third injection was required. The patients then remained quiet, breathing regularly and deeply. The face was flushed. In all cases the kidneys remained unaffected, but the pulse was always changed. It becomes more rapid, softer and weaker. The patient usually remained asleep for 4-8 hours after the operation, and awoke without any after-effect. The thirtieth case operated by Flatau died from cardiac failure and œdema of the lungs, which began 4½ hours after the operation. Every means was tried to save the patient, but he died in 1½ hours. This makes the third death out of 280 operations done by this method, so that Flatau rightly

condemns the procedure as dangerous and unsuitable for ordinary operations.

Grevsen⁵ has used the procedure in 69 cases, and has never had a serious symptom. In 54 cases the patients were as quiet as if they had been deeply under chloroform, while in 15 cases they were restless. The best way to avoid this restlessness is to allow the patient to lie quietly for some time after being put on the table. The restlessness caused by lifting them out of bed then rapidly disappears. All the patients, whether they were restless or deeply comatose, felt nothing of the operation. Only two of them were sick after the operation. With some elderly people the effect of the injection persisted for some time, and it was a day or two before they became quite clear-headed. Grevsen is quite satisfied with his experiences. He thinks it a very good plan for the country doctor who has no assistant. The objections to the method are that the dosage is inexact, and must be arranged for each patient according to the age and strength. It is also impossible to say whether the patient will remain quiet or become restless. Then again there is no means of absolutely knowing how much should be given. A further objection is that once the drug is given we have no means of limiting its action. Grevsen allows that Flatau is correct in saying that the method is dangerous, but he thinks that with further experience and improvement in dosage the danger will be diminished.

REFERENCES.—¹*Münch. Med. Woch.*, No. 28, 1903; ²*Ibid*, No. 9, 1903; ³*Ibid* No. 27, 1902; ⁴*Ibid*, No. 28, 1903; ⁵*Ibid*, No. 32, 1903.

SERUM THERAPY.

In the past year much attention has been paid to the production of an efficient **Antistreptococcic Serum**. Various sera had previously been produced, but the therapeutical results were not brilliant. The best known of the older sera was that of Marmorek. He virtually assumes that all streptococci, from whatsoever source obtained, are identical, and secondly, that a streptococcus exalted by a special method of passage through animals retains its virulence for man. The unity of the streptococci has been denied by Van der Velde, Courmont, Mery, Moser, Meyer, Paltauf, and Piorkowski, while on the other hand Menzer¹ and Aronson are strong supporters of the view that all streptococci are identical and merely modified by environment. Petruschky showed that 10 c.cm. of Marmorek's exalted virus could be injected into a cancer without causing any symptom,

though $\frac{1}{1000000}$ c.cm. killed mice in twelve hours. Menzer³ states that the only way to test a serum is by experiment in man. He defines a normal serum as one which in doses of 1 c.cm. will cause both local and general reaction in a patient suffering from chronic streptococcic infection.

Most of the recent workers have avoided these two fallacies by cultivating their streptococci directly from human beings, and injecting them into horses without preliminary exaltation by animal passage. In this way Moser¹ prepared a serum for **Scarlatina**, using streptococci obtained from the heart blood of fatal cases. Baginsky had already shown that in fatal cases the streptococcus is very generally present in the blood of the heart and internal organs. He does not think that there is anything specific in the character of the germ to distinguish it from other streptococci. On the other hand, Moser,² as the result of experiments on the clumping of the streptococcus, holds that the scarlatinal form is a special variety. In preparing his serum he uses fresh strains obtained by direct culture from fatal cases, and produces a polyvalent serum by injecting his horses with increasing doses of a mixture of living cultures obtained from various sources. The organisms were grown directly from bouillon to bouillon, and were not passed through animals. The serum was drawn off and preserved without the addition of any antiseptic.

Using large doses (180 c.cm.) of this serum, Moser claims to have obtained favourable results in **Scarlet Fever**. The whole course of the disease is shortened, convalescence occurring much sooner. Clinically the chief effect is rapid improvement in the general condition. With early injection the rash does not develop fully, or fades rapidly. Temperature and pulse often show a critical fall. Symptoms of heart weakness are favourably influenced. The throat clears up quickly, and deep necrosis is prevented, though superficial ulceration may occur. While serum rashes were frequently noted, joint pains and abscess formation were very rare.

Popischill³ is also convinced of the good effects of Moser's serum. He tested it only in severe cases. Of 12 cases with a dubious prognosis 9 were cured, while of 13 cases with an absolutely bad prognosis, 5 were saved. The chief effects of the serum were fall of temperature, diminution in pulse-rate, and in respirations. The pulse becomes harder and fuller. The mind is clearer, and there is quiet sleep. Cyanosis disappears,

the extremities become warm, and the amount of nourishment taken is increased. Later the reactionary redness of the mucous membrane, the rapid disappearance of foetor, and the trifling suffering of the children are noticeable. He mentions one extraordinary case where injection caused a fall of 3° C. with temporary improvement, followed by collapse, and gradual recovery. Fourteen days after the injection the temperature rose again, and symptoms of streptococcic sepsis set in, with large cutaneous hæmorrhages. From these and from the blood streptococci could be obtained. The general health was not affected, and the child recovered. Both Baginsky and Moser find Marmorek's serum useless in scarlatina.

Baginsky⁴ reports on the whole favourably of a new serum prepared by Aronson, which differs from Moser's in having the virulence of the streptococci exalted by previous passage through susceptible animals. Its action is slow but progressive.

In a paper on the use of serum in streptococcic conditions, Menzer points out that the serum is anti-bacterial, not antitoxic. It acts by stimulating the phagocytes. In the struggle, cells, bacteria, and leucocytes are destroyed, and the tissues of the host must absorb this *débris*. Wherever there is large destruction of tissue, as in phlegminous peritonitis, provision must be made for free drainage, otherwise the patient will succumb to septic absorption without septicæmia. Even enormous quantities of serum cannot make the absorption of pus innocuous. The serum acts chiefly by stimulating the phagocytic cells of the organism. During the destruction of a local lodgment of streptococci there is a local reaction. The dose of the serum must vary with the object desired. With imminent danger of general streptococcic invasion of the blood large doses (20-30 c.cm.) may be given, and repeated if necessary.

In **Erysipelas** the spread of the inflammation must not be taken as the indication of the action of the serum. The bacteria in the blood may be destroyed by the serum, but the further destruction of the bacteria in the skin will be attended with local reaction.

In **Mixed Phthisical Infection**, the dosage requires care. In a rapidly-spreading mixed infection occurring at an early stage of phthisis, large doses may be curative, but wherever there is cavity formation serum should not be used. In chronic stationary forms very small doses ($\frac{1}{2}$ c.cm.) should be tried every eighth day, gradually increasing the dose. The infection is

always more extensive than shown by the physical signs. The effect of the serum is to change a chronic pulmonary infection into an acute infection.

The serum is contra-indicated in large pericardial and pleuritic **Effusions**, since increase of the effusion may be expected. In acute and chronic **Rheumatic Endocarditis** with enlargement of the heart, in involvement of several valves, and especially in stenotic conditions, the serum should not be used. In **Post-rheumatic Chorea** small doses ($\frac{1}{2}$ –1 c.cm.) at first increase the irritation and movements, but continued use leads to rapid improvement.

Acute Rheumatism.—Menzer has used his serum with some success in acute rheumatism, and Schmidt⁵ gives his experiences with Menzer's antistreptococcic serum in 15 cases of the same disease. Eight of the cases were subacute and had resisted all other treatment. Of the remaining cases, three were acute and four chronic. The injections were made in the vicinity of the affected joints, and the amount injected daily was 15 to 20 c.cms. The more distinct the reactionary swelling, redness, and erythema, the more certain was the benefit. The reaction is beneficial, and not, as Aronson thinks, an unpleasant by-effect. In six of the cases there was distinct objective improvement shown in better walking, etc. In four cases there was subjective improvement, while in the remaining five no effect was obtained. Without making any claim for a specific action, Schmidt thinks that the serum treatment should be tried in subacute cases when other measures have been exhausted.

Typhoid Fever.—Josias⁶ reports favourably of Chantemesse's anti-typhoid serum in children. Under antiseptic precautions a dose of 1 c.cm. per 30 kilos. body-weight is injected in cases seen early. In advanced cases, and where the patient is adynamic, this dose should be reduced by one-half. The diet is of importance. For the first twenty-four hours only water is given, next day a litre of milk is added, and on the following day this is raised to 2 litres. The serum injections reduce the temperature. The fall occurs within twelve to twenty-four hours, and in many cases is followed by a definite rapid cure. In about one-third of the cases the disease seemed to be cut short. This effect is most marked if the injection be given before the eighth day. Only one injection was as a rule required. In many cases the temperature was reduced for a few days, and with the elimination of the serum it gradually rose again.

Hay Fever.—Another disease which has been brought within

the range of serum treatment is **Hay-fever**. Dunbar⁷ has shown that in the starch grains of the pollen of various graminaceæ there is a toxin which is specially soluble in the saliva, tears, nasal mucus, and blood serum. In persons subject to hay-fever the application of the toxin or toxic pollen to the eyes and nose causes irritation and all the symptoms of hay-fever. When it is injected into the arm there are in addition asthmatic symptoms, and the whole arm swells. In non-susceptible people neither the local application nor subcutaneous injection cause much reaction. After a susceptible person has been injected there is for a short time immunity against the direct irritating effect of the pollen applied to the nose or eye. For this toxin an antitoxin has been prepared. Locally applied and injected subcutaneously the antitoxin caused no irritation even in susceptible persons. A mixture of toxin and antitoxin causes no symptoms, while during an attack the local application of the antitoxic serum causes immediate disappearance of the irritation, but the redness and injection persist. Although apparently a perfect antitoxin for the toxin, it yet remains to be seen whether the serum is a cure for hay-fever. Meantime the toxin is a useful diagnostic method of distinguishing true hay-fever from allied conditions due to influenza and bronchial asthma. In such conditions the injection of the serum and the local application have proved useless.

Exophthalmic Goitre.—Lanz⁸ points out that after **Removal of the Thyroid Gland** by disease or operation, poisonous substances accumulate in the blood. The administration of thyroid gland preparations, either subcutaneously or by the mouth, removes these symptoms. Exophthalmic goitre is supposed to be due to excessive production of thyroid secretion. Consequently, by introducing into the body of the patient the poisonous substances which cause cachexia after removal of the thyroid, it might be possible to neutralize a part of the excessive secretion. To test this view, Lanz has removed the thyroid gland from goats, and has given the milk to six cases of **Exophthalmic Goitre**. The results were satisfactory. The patients improved both subjectively and objectively.

Working on the same lines, Möbius⁹ used the serum of sheep from which the thyroid gland had been removed. The dose was 5 grms. in tablet form. The flesh had no therapeutic action, but the serum in two cases caused distinct improvement in the patients' condition. The pulse-rate was not much affected,

but the circumference of the neck became smaller, and the tension of the swelling diminished, while the patients became more tranquil and slept better.

Burghart and Blumenthal¹⁰ confirm these favourable reports. They have used the serum in two cases, while in ten cases **Rodagen**—a preparation made from the milk of goats—was employed. The serum was given subcutaneously in doses of 1 c.cm. It was at first used every day, but subsequently only every second day. There was rapid improvement in one case. The struma diminished, pulse-rate fell, the patient slept better, and put on 10 lbs. in weight. On stopping the injections the patient relapsed. Rodagen gave equally good results. In every case sleeplessness passed off, the patients gained strength and weight, and the tremors and sweating disappeared. In two cases the exophthalmos completely vanished. In a few cases the goitre remained unaltered in size, but in every case it became softer in consistence.

Longcope¹¹ has made an interesting observation about the bacteriolytic power of the blood in chronic affections. It is well known that people suffering from chronic nephritis and cirrhosis of the kidney frequently succumb to a terminal infection. Now Longcope finds that in such conditions the blood has its bacteriolytic power greatly reduced in many cases owing to decrease in the bacteriolytic blood complement. The terminal infection is the direct result of this diminution in the bacteriolytic power. In the case of certain individuals suffering from chronic diseases the bacteriolytic power of the blood does not appear to be diminished, and these individuals escape terminal infections. The complement may be looked upon as the index of resisting power. With diminished complement the resistance is reduced. With normal or increased complement, resistance is maintained. The rise in complement is often associated with an increase in leucocytosis, and appears to lend support to the view that the complement takes its origin, or at least is present, in the bodies of the leucocytes.

Walker¹² finds that the amount of complement present in a given serum varies from hour to hour after the blood is shed. If left in contact with the clot, the complement undergoes a steady increase during the first few hours, and then progressively loses its complement. On the other hand, serum separated from its clot, or whipped blood, do not show the preliminary rise, but steadily lose in complement. Walker thinks that this shows

that the complement is obtained from the leucocytes of the clot. He also shows how excess of immune serum, by absorbing all the complement, may bring about a fatal issue in infections.

In the Huxley lecture, 1902, Welsh pointed out that many bacteria when within the living body can develop more potent virus than when growing in artificial culture media. He suggests that just as the living tissue cells adapt themselves to invading germs by producing protective substances, so possibly the germs themselves, being living structures capable of adaptation to a harmful environment, may as a measure of self-protection produce cytotoxins of exalted potency.

Noguchi¹³ has shown that the sera of cold-blooded animals contain common receptors, and that artificial hæmolysins, agglutinins, serum-precipitins, milk coagulins, and aqueous humor precipitins, can be produced through immunisation in certain cold-blooded animals. Hæmolysins and agglutins for erythrocytes can be produced in animals which do not themselves possess erythrocytes.

One of the most important contributions to our knowledge of the action of antitoxins on toxins has been made by two Danish observers, Arrhenius and Madsen.¹⁴ They worked chiefly with tetanolyisin and antitetanolyisin. *Tetanolyisin* is a constituent of tetanus toxin, and possesses the power of dissolving red blood corpuscles. This property is, however, limited, so that a given quantity of tetanolyisin can only dissolve a given quantity of blood corpuscles. The hæmolytic action of tetanolyisin is neutralised by *antitetanolyisin*. They have been able to show that this neutralisation is directly comparable to the neutralisation of an acid by a base. The effect of a given quantity of antilyisin can be calculated, and the actual experimental results correspond closely with the calculation. These physico-chemical experiments have brought the action of the cytotoxins within the scope of accurate scientific observation.

Max Gruber and Pirquet¹⁵ have used these facts as the basis of a vigorous attack on Ehrlich's "side-chain" theory. They claim that all the known facts concerning the action of antitoxins on toxins can be explained on the assumption that there is only a weak affinity between the toxins and the antitoxins, and that thus they never completely neutralise one another. They consider that the process may either be formation of such combinations formed from dissociated compounds, or that in many cases molecular combinations in varying proportions

arise. Either of these two theories explain most of the known facts. The sole postulate is that between toxin and antitoxin there is only a weak affinity, and that therefore complete neutralisation never occurs. They deny the existence of haptophore and toxophore groups, and conclude that there is only a single form of poison, and that the pleurality of poisons which Ehrlich claims to have shown, is merely the expression of partial neutralisation of two bodies of weak affinity.

REFERENCES.—¹*Berlin klin. Woch.* Nos. 48 and 49, 1902; ²*Wien. klin. Woch.* No. 41, 1902; ³*Ibid.* No. 15, 1903; ⁴*Berlin klin. Woch.* Nos. 48 and 49, 1902; ⁵*Münch. Med. Woch.* No. 39, 1903; ⁶*Arch. de Thérap.* June, 1903; ⁷*Münch. Med. Woch.* No. 23, 1903; ⁸*Ibid.* No. 14, 1903; ⁹*Ibid.*; ¹⁰*Therap. d. Gegen.* No. 7, 1903; ¹¹*Univ. Pennsylv. Med. Bull.* Nov. 1902; *Jour. Hyg.* No. 3, 1903; ¹²*Ibid.*; ¹³*Univ. Pennsylv. Med. Bull.* Nov. 1902; ¹⁴*Festschr. af. Staat. Serum Inst.* 1902; ¹⁵*Münch. Med. Woch.* Nos. 24 and 25, 1903.

SILVER, COLLOIDAL. (See also "Argyrol.")

Colloidal silver or **Collargol** is an allotropic form of silver, which is soluble in water and in the secretions of the body. It is used chiefly as an external application in the form of an ointment containing 15 per cent. The amount of ointment used varies from 15 to 45 grs., according to the age of the patient. For intravenous use a solution of 1-200 is employed. The amount of the silver injected varies from $\frac{1}{2}$ to $\frac{5}{16}$ of a grain. The use of the injection has been followed by some wonderful cures in septic conditions, such as **Malignant Endocarditis**. Netter¹ has used the injection in ten different kinds of cases with marked success. In a case of **Pneumonia** the fever dropped immediately and disappeared in three days. A suppurating **Cerebro-spinal Meningitis** was also successfully treated. The day after the injection the temperature was normal and convalescence was rapid. Similarly successful results were obtained in cases of severe **Scarlatina**, **Toxic Diphtheritic Anginas**, and **Adynamic Typhoid**. A single application of collargol gave immediate relief in a case of **Pyohæmia**. It is not known whether the drug acts as an antiseptic. Perhaps there is a catalytic action, or there may be a stimulation of the defensive powers of the organism, or simply a neutralisation of the toxins.

REFERENCE.—*Jour. de Méd.* vol. xv, p. 14, 1903.

THEOCIN.

Theocin is synthetically prepared theophyllin. The reports about it are singularly similar. Its toxicity is about the same as caffeine. In animals¹ it causes gastric irritation, loss of

appetite, and general excitement, followed by spasms and convulsions. The muscles become rigid, and diuresis is greatly stimulated. In man theophyllin acts more powerfully than theobromine and caffeine, and the newer double salts agurin and diuretin. Minkowski² found that the heart, pulse-rate, and blood-pressure, remain unaltered. The kidneys are not irritated, the albumin, if present, is usually diminished. In several cases the drug caused nausea, vomiting, and loss of appetite. Headache and general excitement are also not infrequent.

All reporters³ agree that it is a reliable diuretic, acting quickly in dropsy of renal and cardiac origin. The diuretic action is characterised by an enormous initial increase, followed by a rapid fall, which cannot be prevented by repeated doses of theocin. If the drug be given after a short interval, only a moderate increase results. Even after a considerable interval the former height is not reached. In most cases the diuretic effect gradually becomes less and less. The diuretic effect in dropsies not of renal and cardiac origin, and in inflammatory exudations, is unreliable.

Theocin is best given in cachets of 5 grs. thrice daily after meals. If general nervous irritation occurs, hedonal can be combined with it.

REFERENCES.—¹*Bull. Gén. de Thérap.*, Aug. 17, 1903; ²*Ther. der Gegen.*, Nov., 1902; ³*Ibid*, Feb., 1903; *Münch. Med. Woch.*, Nos. 9, 13 and 30, 1903; *Treatment*, Feb., 1903.

ULMARENE.

This is a mixture of salicylate esters and alcohols, of high molecular weight. It is a pinkish-yellow fluid, of pleasant odour and pungent taste, containing 75 per cent of salicylic acid. It is entirely soluble in water and alcohol. The watery solution gives no violet reaction with perchloride of iron, which the alcoholic one does.

Hibert¹ finds that ulmarene possesses all the properties and qualities of salicylic esters. Burdet and Chevalier² think that ulmarene is destined to take the place of methyl salicylate, which has a penetrating odour disagreeable to many patients. Applied to the skin, salicylic acid can be detected in the urine three hours afterwards. No irritation of the skin occurs. As an external application patients prefer it to methyl salicylate. It has the same action, causing analgesia and lowering of temperature.³ No untoward results have been noted. One of the authors took 5 grams in a single dose without the least

disturbance ensuing. It is less toxic than methyl salicylate, and has in addition the advantage of being almost odourless.

REFERENCES.—¹*Thèse de Paris*, 1902; *Treatment*, Feb., 1903; ²*Bull. de Thérap.*, June 30, 1902; *Treatment*, Sept. 1902.

UROTROPIN.

Widowitz¹ gave small doses of urotropin (·05 to ·5 gram) three times daily in 102 unselected cases of **Scarlet Fever**. The drug was given in the initial fever and also in the third week. In none of the cases did nephritis occur. In a case of paroxysmal hæmoglobinuria there was a very marked therapeutic action. Without claiming that urotropin is a specific against scarlatinal nephritis, the author thinks that it is well worthy of trial as a prophylactic.

REFERENCE.—¹*Wien. klin. Woch.* No. 40, 1903.

VERONAL.

This is a new hypnotic, the diethylmalonylurea. Poly¹ finds it an extremely good **Hypnotic**. In doses of 4 to 12 grs., given in capsules, it produces sleep in half to one and a half hours. If given in solution the sleep is induced quicker. It is useless in sleeplessness due to pain, unless combined with morphia. It does not have an irritating action on the stomach, and does not depress the pulse. Occasionally sleepiness is noted next day.

Offer² also praises the drug. He gives initial doses of 0·5 grm. and increases this every day by 0·05 grm., till secondary symptoms occur, when he diminishes by the same amounts. He finds this plan convenient, since long-continued use of the drug leads to the hypnotic effect being postponed and sleep takes longer to occur. Consequently, in such cases the effect of the drug persists next day in the shape of headache, dizziness, and nausea. Doses larger than 1 gram should not be given. Veronal is specially indicated for those people who may require a hypnotic for a short time.

Lilienfeld³ specially recommends the drug for the troublesome sleeplessness of morphinists. He points out that is very cheap.

REFERENCES.—¹*Münch. Med. Woch.*, No. 20, 1903; ²*Cent. f. die ges. Therap.*, July, 1903; ³*Berlin. klin. Woch.*, No. 21, 1903; *Therap. Monats.*, April, 1903.

YEAST.

Turro, Tarruella and Presta¹ find yeast has a distinct effect on streptococcic and staphylococcic infection in rabbits. They employ a well developed culture of beer yeast. Of this 10 c.c.

is injected subcutaneously. If this be repeated for four to six days, a temporary immunity against streptococci and staphylococci is obtained. If pus is already present, the pyogenic organisms gradually die off and the pus becomes sterile. The active principle of the yeast is contained in the cell protoplasm, and only becomes evident after the yeast has been digested by the leucocytes of the lymph. When given by the mouth, the action of certain bacteria in the intestine liberates the active principle, and renders it capable of absorption.

Roos and Hinsberg² have isolated an active fatty substance constituting about 3 per cent of the yeast. To this substance they give the name of **Cerolin**. It represents the purgative principle, and has also beneficial effect on furunculosis and acne. Cerolin is a stable substance capable of accurate dosage, and it does not cause fermentation. To obtain it yeast is extracted with absolute alcohol. The dried extract is dissolved in hot liquor sodæ. The alkaline solution is treated with ether, and then precipitated with calcium chloride solution. The dried precipitate constitutes cerolin.

Several **Extracts of Yeast** ³ have been put upon the market. It is claimed that they may be used instead of the ordinary meat extracts. The yeast extracts do not contain kreatin, to which the stimulation of the appetite is usually ascribed. They are very rich in xanthin bases, and increase the amount of uric acid in the urine.

Brigey⁴ says that good beer yeast contains seven-tenths *saccharomyces cerevisiæ*, three-tenths being impurities. It should be kept in a dry cool atmosphere. Moisture and warmth enable the impurities to replace the *saccharomyces cerevisiæ*, and probably explain the inconstancy of the action. Yeast acts as an intestinal antiseptic, retarding microbial growth and decreasing the formation of intestinal ferments. In diabetes it acts by converting the starchy elements into alcohol. The invertin changes the cane sugar into glucose, and the diastase converts glucose into alcohol. Yeast produces a toxic secretion which is bactericidal, a stimulating secretion producing leucocytosis, and has a phagocytic action. These are vital actions, and depend on the condition of the yeast and the nature of the intestinal contents. Instead of beer yeast, grape yeast grown in a medium of similar acidity to that of the stomach can be used. Some of the active medium may be given along with the yeast. The most active preparation is a recent growth, but this is liable

to variations. Dried preparations obtained by evaporation are less active, and frequently only contain débris of the yeast cells, but a good preparation should show under the microscope that the cells have retained their normal form. The odour should be that of the fresh preparation, and the colour *café au lait*.

REFERENCES.—¹*Cent. j. Bakt.*, Bd. xxxiv. ; ²*Münch. Med. Woch.*, Nos. 28 & 29, 1903 ; ³*Ziets. f. Diät. et Physik. Therap.*, No. 9, 1903 ; ⁴*Arch. Gén. de Méd.*, April, 1903 ; *Brit. Med. Jour.*, June 27, 1903.

YOHIMBIN.

This drug, introduced as an aphrodisiac in the *Medical Annual*, 1902, has been found by Magnani¹ to act as an **Anæsthetic** when applied to the conjunctiva. Within a minute or two of applying a few drops of a $\frac{1}{3}$ -1 per cent solution, the cornea becomes anæsthetised and remains so for half an hour. The pupil is unchanged or at most slightly contracted. There is always injection of the blood-vessels. Loewy and Müller² confirm these observations, and have fully worked out the anæsthetic action of the drug. They find the 1 per cent solution can be used to anæsthetise mucous membranes. Applied directly to nerves, it reduces the irritability at the point of application, while conduction through this part is diminished. Thus both motor and sensory conductivity is reduced. Magnani³ finds that injections of 4 drops of a 1 per cent solution causes in a few moments anæsthesia, which lasts for over an hour, and allows small operations to be done. For eye work it is specially adapted, owing to the absence of mydriasis, the constant and prolonged anæsthetic action, and the absence of toxic symptoms.

REFERENCES.—¹*La Clinica Moderna*, No. 35, 1902 ; ²*Münch. Med. Woch.*, No. 15, 1903 ; ³*Ibid*, No. 28, 1903.

RADIO-ACTIVITY AND ELECTRO-THERAPEUTICS.

BY

JOHN MACINTYRE, M.B., C.M., F.R.S.E.

DURING the past year there has been great evidence of an ever increasing interest in the therapeutic action of X-rays, high-frequency and high potential currents, as well as in the light treatment. These different agents have been applied in pathological conditions, and in many instances with success. No doubt, as in the past, the greatest attention has been paid to such affections as **Lupus, Rodent Ulcer, and Epithelioma**. Everything, however, which has taken place during the year, has tended to confirm the views expressed in last year's abstract. Lupus can unquestionably be commanded by patient and careful applications of one or other of the forces about which we are now writing. It is true that in some cases there is a tendency to relapse, but many workers are not without hope that with increased facilities, new apparatus, careful attention during the application, and greater experience, the recurrences will diminish in number. Coming to the question of malignant new growths, any reader of medical literature can see on going over the reports of different societies, that what are often spoken of as "cancers" and "epitheliomas" are really rodent ulcers. Speaking of this last-mentioned affection, there is no doubt of the curative effects of one or other of these agents, and the favourable reports of cases are constantly increasing; there can be no doubt also, that a considerable number of cases which might be classified quite correctly as more serious than rodent ulcer, under the heading of epithelioma, have been improved. It is to be regretted, however, as was said before, that in the public press the success which has attended the treatment of rodent ulcer and superficial epitheliomatous tissues (and it might be added, some affections in cavities which can be got at) have led to false conclusions on the part of the public. Of malignant disease situated in the deeper tissues of the body, it may at once be said that it is extremely difficult to find anyone yet claiming a cure in a genuine case in which the tissues have been microscopically examined.

There has been no startling development recently as far as the technique is concerned. It may be said, generally, that the apparatus for X-rays, high-frequency high potential currents, and light treatment, has been much improved, while

the reports of many operators show that there has also been improvement in the methods of applying them. Most hospitals are aiming at medical and surgical electrical installations, and speaking generally, great progress is being made in this branch of the work. The risk of burns has been greatly reduced, owing to the great increased speed in taking photographs, and practical results obtained by means of instantaneous photography are becoming daily more common. Another feature of the work is the increased number of operators who are going in for stereoscopic photography. Every year it is becoming more evident to the profession that the best results in diagnosis are obtained by this method.

X-RAY TREATMENT.

APPARATUS.—Coils.—Every instrument maker, to judge by the catalogues, is striving to make his coils better, and capable of greater variation in the primary. Hirschmann of Berlin, Gaiffe of Paris, Max Kohl, Dent, Cox, Apps, Newton, Isenthal, Dean, and Miller and Wood, amongst others, have improved their coils during the past year, and the same remark applies to American instruments such as those made by Queen & Co., of Philadelphia. The most important improvements are greater possible variation in self-induction, and better insulation.

Influence Machines.—Improvements in the Voss type are recorded by Schall and Gebbert, who have made the two plates movable. Smith and Wade have shown some beautiful instruments in this country on the Wagner micro-plate principle, and Gaiffe's latest productions are excellent.

Interrupters.—Improvements in interrupters have also been made. Isenthal has a new one called the film brake; Max Kohl and others have improved theirs; Wilkins has produced a good mechanical brake with rotary wheels, the advantage being that there is no mercury used; and the Sanitas Electrical Co. have improved the mercury-jet interrupter (Wodals). Simple and in many cases efficient and economical forms of *rectifiers* have been introduced; Woden's by modification of the Hewitt vapour lamp, and Chaplin (Cox) showed a cheap and good instrument at one of the meetings of the Röntgen Society.

Tubes.—Many excellent tubes have been introduced during the past year. Some of the best and most powerful have been made by Hirschmann of Berlin, and Dr. Clark has introduced a new dental tube.

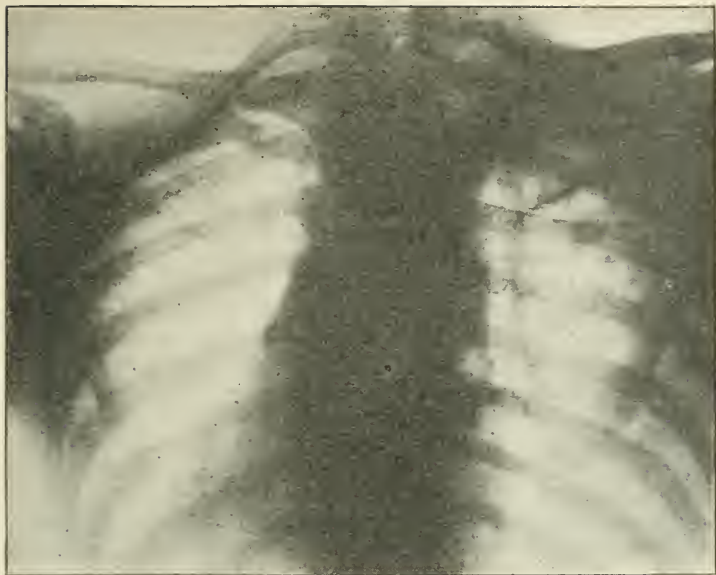


Fig. 1.—Showing the opacity of right apex. *Stanley Green.*

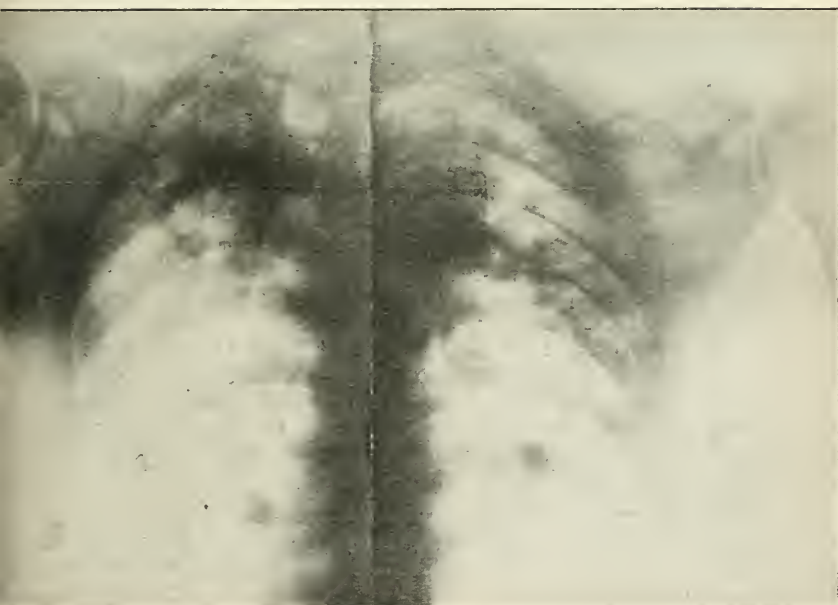


Fig. 2.—Mottling through the lung, which disappears if lung clears up, or becomes more marked if the case does not respond to treatment. *Stanley Green.*

Localisers.—Isenthal last year demonstrated the advantage of a somewhat complex but useful localiser named the "orthodiagraph."

Gauges.—Gaiffe has modified and improved his apparatus, and Walter has produced a new "skiameter."¹

Finsen Light.—As will be seen further on in this article, Finsen still looks upon his own lamp as the best, and points out that Schjoring of Copenhagen is making a more portable Finsen-Reyn lamp for the treatment of one patient at a time. This instrument Finsen himself says is good.

DIAGNOSIS.—During the past year all branches of the profession testify to the excellent work which is being done by the use of X-rays for **Diagnostic Purposes**. In surgery the advantage of X-rays in the detection of renal calculi, a subject fully illustrated in last year's *Annual*, is becoming more manifest. Hall Edwards has written an interesting paper on this subject during the year, and Lenard of Philadelphia and Shenton of London are still having results, as also mentioned in the last issue of this *Annual*, which conclusively prove the value of this method of diagnosis. In medicine also it is becoming more and more evident that physicians are employing the X-rays for diagnostic purposes to great advantage. Stanley Green (two of whose plates are reproduced in *Figs. 1 and 2*), in a communication to the publishers, says: "The points to be noted in the screen examination of cases of pulmonary tuberculosis, are (1) Movements of the diaphragm: (a) amplitude: (b) Inequality on the two sides in quiet and forced respiration; (c) Any jerky "cogged wheel" movements. (2) Trans-radiancy, especially in the spinal regions; the effect of a deep inspiration on comparatively opaque areas must be carefully noted. (3) Where cavities are present the effect of change of position from horizontal to erect must be tested. The exposures must be short, and the development of the plates very thorough. Dr. David Lawson² emphasises the advantages to physicians of screen work over photographs, as seen in the movement of organs and of the chest wall. He refers particularly to diagnosis in such cases as pneumothorax, pleurisy, tubercle, aneurysm, enlarged bronchial glands. Mills³ reports a case in which the Röntgen rays were of definite advantage in the localisation of a cerebral tumour. The photograph showed an abnormal shade of three inches in diameter, irregular in outline, in the Rolandic area.

THERAPEUTICS.—Anyone engaged in trying to form an opinion of the true value of X-rays in malignant disease finds difficulty

in coming to a conclusion. Not that there is any lack of literature, for the references to treatment by different operators in all parts of the world have increased to enormous dimensions. The difficulty still arises from the fact that different writers continue to speak of "cancer," but when one makes careful examination, too often it is apparent that rodent ulcer, superficial epitheliomata, and other minor conditions are included under this term. Again, many of the cases given have been so recently treated that the question of possible relapse cannot be forgotten.

Dr. Johnson⁴ quotes what has been accomplished by Dr. Gilman. He says that "of twenty-five cases of cancer, he has lost but two—one of the throat and the other scirrhus of the breast. Dr. Gilman says that he has a hundred cases of cancer under treatment; that during the last fourteen years he has treated over two hundred cases, with a record of recovery greater than that from typhoid fever in private practice." The exact diagnosis of these cases would be interesting. Dr. W. B. Coley⁵ reviews the present status of X-ray treatment of malignant tumours. He quotes Dr. Gilman (see above), and states also that Dr. Francis Williams, of Boston, in his well-known book upon the X-rays and in later monographs, has given abundant evidence that superficial epitheliomas may be made to disappear under the X-ray treatment. In his own paper he also says, "At the recent X-ray symposium of the New York Medical Association, Dr. Chas. W. Allen⁶ reported fifty cases of cancer treated with the X-rays during the current year. A large proportion of these cases, however (thirty-three), were superficial epitheliomata of the rodent-ulcer type, or other forms of cutaneous carcinoma. Ten cases were mammary cancer, seven recurrent, and three primary. Of this number he states that twenty-six, or 52 per cent, were discharged "clinically cured." Three only were discharged unimproved, five ended fatally. Dr. Coley also refers to the work of Pusey, Grubbe, Skinner, Morton, and Johnson, all confirming to some extent Dr. Williams' statements.

Dr. W. B. Coley⁷ speaking of his own work, says that he has treated seventy-five cases. The following is his summary of the cases of sarcoma: twenty-five cases of inoperable sarcoma were treated between February, 1902, and January, 1903. Anatomically classified, they are as follows: six of the neck, three of the thigh, three intra-abdominal cases, three of the parotid, two of the pectoral region, two testis, one each of the femur, back, frontal sinus, iliac fossa, chest wall, and superior

maxilla. In four cases of inoperable round-celled sarcoma the tumours entirely disappeared, and up to November 17th (the time of the reading of the paper), three had remained free from recurrence. Up to January 23, 1903, recurrence had taken place in every case. In one of these cases, an inoperable sarcoma of the neck and pectoral region, which disappeared in June, there was extensive metastatic development in both groins and the abdomen in September. The groin tumours had entirely disappeared under renewed X-ray treatment, and the abdominal tumour was slowly decreasing in size. As to the present condition of the other four patients, he refers to the histories given above. Seven other cases have shown improvement. Three of these were round-celled, one melanotic, and two spindle-celled. One of the latter is so recent that it is hardly fair to consider it. In another spindle-celled or fibro-sarcoma, the toxins were used in addition to the X-rays.

Dr. Coley, whose excellent work is so well known, concludes his valuable paper with the following statements: "My experience thus far leads me to believe that while in the X-ray we have a most valuable therapeutic agent for inoperable cancer of all varieties, in the great majority of cases the beneficial influence of this agent is only temporary. Yet, in a small proportion of cases, mostly superficial epithelioma and sarcoma, the tumours have disappeared, and there is reason to hope that in a few of these cases a permanent cure may result. These results, while sufficient to warrant us in advising the treatment in all forms of inoperable malignant disease (not too far advanced), by no means justify us in offering this method as a substitute for operative treatment in primary operable tumours. Let us look for a moment at the results thus far obtained. We find abundant evidence that the X-rays have an inhibitory action on all forms of malignant tumours, yet the number of cases is insufficient to enable us to state what particular varieties are most susceptible to this influence. So far, it would seem that sarcomas primary in the lymph glands yield most readily to the treatment. Superficial epitheliomas might be placed in the same category. Several cases of recurrent carcinoma of the breast have been observed, in which the growths have entirely disappeared after prolonged exposures to the X-rays. Yet all these cases have been too recent to be classed as cured. In fact, sufficient time has not yet elapsed in a single case of cancer treated with the X-rays, to justify us in regarding it as cured. While this should

on the one hand, prevent us from reporting patients as cured in whom the tumours have merely disappeared under treatment, it should not, on the other hand, lead us to minimise the importance of these immediate results, even be they no more than a prolongation of life or an alleviation of suffering. One cannot witness the marvellous melting away or disappearance of an undoubtedly malignant tumour under a few weeks' or months' treatment with the X-rays, without feeling that we have a new and powerful addition to our hitherto scanty means of attacking this disease. The knowledge of this new agent is so slight, that there is added hope in our very ignorance ; for by deeper insight into its nature, gained by further experience, we may hope to better utilize its power, and thus accomplish greater results. In the meantime, while the X-ray has a legitimate place in the treatment of inoperable cancer, present data do not warrant us in advising the method in primary operable cases."

Dr. W. Jas. Morton⁸ says "although a doubt as to whether the X-ray itself, or whether the high-potential, high-frequency current accomplishes the result, may be said to be arising still, the fact itself is well established that cancerous disease, when not caused to disappear altogether, exhibits, at least for a longer or shorter time, a retrogression under X-ray treatment. There are, however, exceptions even to this statement ; for I have watched an advanced and inoperable carcinoma of the neck, and in another instance equally advanced and inoperable carcinomatous glands of the axilla, steadily growing in size in spite of and in face of most faithful treatment. And again, in the case of extensive ulceration of recurrent and inoperable carcinoma, I have observed recurrent cancer areas steadily disappear, while at the same time the case went on to a fatal termination, due to the existence of cachexia and of secondary septic infection. Or again, I have caused local cancer to disappear, and yet known death to ensue from distant and unexpected metastases. If then we would still claim that the X-ray is as nearly a cure for cancer as any other method of procedure yet found, we must also at the same time admit that from a comprehensive point of view it is certain that it is meeting with cases of certain stages and types which it cannot under present management and conditions overcome."

Dr. Brockman⁹ wrote to about fifty of the leading surgeons, dermatologists, and laryngologists in the United States, asking the results of their experience with the X-rays in the treatment of : (1) Superficial carcinoma ; (2) Deep-seated carcinoma

(3) Sarcoma ; (4) Lupus ; (5) Tuberculous laryngitis ; (6) Tuberculous glands. He found on analysing the cases reported on account of this correspondence, that there were forty-four cases of sarcomata, ten of which were apparently cured, one improved, and seventeen not improved. Of these latter, most were given only a few treatments, and some were nearly dead when they came under observation. All cases treated were inoperable, and the X-rays used as a last resort ; four were then under treatment. Of cancers, eighty cases were reported, fifty-two superficial carcinomata. Of these thirty-two were healed or apparently cured, five were improved (pain reduced and tumour decreased in size), ten not improved, six now under treatment. Most of these were situated on the face, where the scar following incision would have been disfiguring. Deep-seated carcinomata twenty-eight : four of which were apparently cured, five improved, fifteen failures, and four under treatment.

Dr. Devalan¹⁰ reports one of the very few cases of **Laryngeal Cancer** improved by the means of X-rays. The patient was aged sixty-five, and the disease was inoperable on account of wide distribution, and the existence of kidney mischief and rheumatism ; the growth was increasing in size, and about eighteen exposures were given. After the first few applications the growth began to soften and its contour seemed to change. Just as the mass was breaking up the treatment had to be abandoned for other reasons, and the patient died of nephritis. There appears no doubt that the patient was benefitted so far as the condition of the throat was concerned. Dr. Scheppegegrell¹¹ has also recorded a case of malignant disease of the larynx in which the whole tumour disappeared. Unfortunately, microscopic examination of the tissues was not made, but notwithstanding this the case, which was inoperable, and in which it was not at all expected anything could be done, got well.

On the other hand failures and dangers have been recorded by many writers during the past year. Dr. Hugh Fraser¹² reports a case of fungating epithelioma of the scalp in the case of a female aged forty. "There was lupus of the chronic non-ulcer variety, and the fungating growths proved by microscopic examination to be malignant ; neither X-rays nor Finsen light were productive of the slightest improvement." Dr. Franzturek¹³ after experiments, came to the conclusion that the more deeply seated tumours could not be cured. He had tried in thirty-five cases, and recommended X-ray treatment should be limited to

inoperable cases. Dr. Samuel Lloyd¹⁴ says, speaking of osteosarcoma, that the most enthusiastic X-ray workers have now recognized they do not seem to influence favourably the deep-seated growths. He was inclined to think that in two cases it had produced unfavourable results in the nutritive tissues. Dr. James Tuttle records a case in which amputation of the thigh had to be undertaken because of the result of X-ray burns. Dr. Vissman had made a careful examination of the amputated limb, and had come to the conclusion that the X-ray burn was the result of the production of an endarteritis and peri-arteritis. Dr. Samuel Lloyd¹⁵ quotes a case of a tube-maker in Edison's laboratory, where after severe burns on the hands and head, skin grafting had been done, and epithelioma grafted on the X-ray burn of the right hand, ultimately necessitating amputation.

Dr. Malcolm Morris makes general reference¹⁶ to the effect of X-rays in other diseases. Of **Keloid** he says that he has treated a few cases, some with diminution of the growth, and that the effect in easing pain has been marked. Of **Lupus Erythematosus** he says that this intractable disease yields much less readily with light treatment than lupus vulgaris. All his cases have, save one, improved considerably, although slowly, and there has been a tendency to relapse when the treatment has been discontinued. He points out that Schiff and Jutassy have had good results with X-rays. In **Acne of Rosacea**, Hyde, Montgomery and Ormsby report favourably, as also Jutassy, Scholtz, Schiff, and Hahn. Good results have been reported in **Eczema** by Hahn and Albers-Schonberg, Hyde, Montgomery and Ormsby, and others. Hyde, Montgomery, and Ormsby treated thirty-two cases of **Psoriasis**, causing temporary disappearance of the lesions. Codman speaks even more favourably of **Hypertrichosis**, and Schiff is inclined to think that, even comparing it with electrolysis, radiotherapy is the only radical treatment. Others speak well of the treatment. Schiff speaks favourably of radiotherapy also in **Sycosis**, while **Ringworm** and **Favus** have likewise been reported to have been improved by the same method of treatment. Dr. Allan Jamieson (see last year's *Medical Annual*) has recorded a case of **Mycosis Fungoides**, in which the tumours wholly melted away, and the thickened patches likewise, under the influence of the X-rays. Dr. Laird¹⁷ reports favourably upon the Röntgen rays in the treatment of **Pseudo-Leukæmia**, and quotes two instances of patients who have been treated by him.

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Press, June 17th, 1903; ³*Phil. Med. Jour.* Sept. 27, 1902; ¹*Brit. Med. Jour.* Jan. 1903; ⁴*Yale Med. Jour.* May, 1903; *Brit. Med. Jour.* June 6, 1903; ⁵*Med. Rec.* March 21, 1903; ⁶*Ibid.* Nov. 15, 1902; ⁷*Ibid.* March 21, 1903, ⁸*Ibid.* May 30, 1903; ⁹*Rail. Sur.* Chicago, March, 1903; ¹⁰*Laryng. Dec.* 1902; *Brit. Med. Jour.* June 6, 1903; ¹¹*Brit. Jour. Laryng. Otol. and Klin.*, 1903; ¹²*New York Med. Jour.* April, 1903; ¹³*Med. Soc. Co. New York*, Dec. 1902; ¹⁴*Med. Rev.* April, 1903; ¹⁵*Ibid.*; ¹⁶*Brit. Med. Jour.* June 6, 1903; ¹⁷*New York Med. Jour.* April 18, 1903.

RADIUM.

Probably nothing in modern science has attracted more attention in the public press than radio-activity, more particularly since radium was discovered. This branch of physics, which is being studied very much at present, owes its origin to the brilliant discovery of M. Henri Becquerel. It is true that previous to 1896 many men had done much to lead up to the discovery, and Becquerel's work was the outcome of the discoveries of Röntgen and other experimenters with the emanations from Crookes tubes excited by the induction coil. Becquerel's classical experiments upon the salts of uranium proved conclusively that something was given off from these bodies, and the result was the discovery of radio-activity. Uranium has been found in several minerals: but one of the best known is uraninite, the popular name of which is pitchblende, in which a large percentage of uranium and small percentages of lead and iron are found. Magnesium and silica and other substances may also be obtained from it. The best specimens have been got from Bohemia, although the same radio-active material has been extracted from pitchblende found in Saxony, Cornwall, and Colorado. Following upon the discovery of Becquerel, M. and Madame Curie still further investigated the elements of pitchblende, and another element was discovered possessing the same properties, to which Madame Curie gave the name of **Polonium**. Still further investigation by them has proved that another element (and the most remarkable of all so far as radio-activity is concerned) is contained in pitchblende, and to this the name of **Radium** has been given. It should also be noted that another substance has been extracted from this remarkable ore, to which Debieren gave the name of **Actinium**.

It must be evident that it is of the utmost importance to physicists and surgeons that a measure of radio-activity should be discovered. M. Becquerel has made a meter for this purpose, while M. and Madame Curie have arranged electroscopes for

the study of the phenomenon. In estimating radio-activity, *uranium* is taken as *the unit*, and other bodies are all compared by this standard.

One of the difficulties which physicians experience in this country is the getting of radium with great radio-activity : and the element itself is only to be obtained in the form of a salt, the most commonly employed being the bromide. Many physicians have had material placed in their hands which must be of little use as far as therapeutics are concerned. The writer of this article had several specimens placed before him guaranteed as pure bromide of radium, but which failed utterly when physical and therapeutical tests were applied to them. When obtaining specimens, therefore, it is absolutely necessary to have a guarantee of the *radio-activity*, apart altogether from the question of chemical purity. The price varies in accordance with this property. Double salts, such as the carbonate of barium and radium, may be obtained at a cost of a few shillings per gram, but the radio-activity may be as low as 40 units. The very best specimens of bromide of radium, on the other hand, may reach as high as 1,800,000 units. The price of this may be as high as £2,100 per gram, and it is only with extreme difficulty that specimens with a million and a half can be obtained. It need hardly be pointed out that many of the poorer specimens have been tried, and failed to give the therapeutic effects which other workers have recorded.

Good bromide of radium should discharge an electroscope with ease. It should likewise cause brilliant fluorescence with barium platino-cyanide, zinc sulphide, and other salts. Some of the emanations readily pass through wood, also some through metals, and Professor Rutherford and others have proved that the substance is capable of giving out heat, the source of which has not yet been determined. Further, Crookes has shown that when a small piece is placed in front of a sulphide of-zinc screen, examined by means of a low power, brilliant scintillations may be observed in large numbers, owing to the continual bombardment of the screen by small bodies which are constantly given off from the radium itself. Experiments have shown that there are three kinds of rays or emanations to be distinguished. (a) Very fine bodies, which are assumed to be the electrons, and which possess the property of inertia ; (b) A second series of rays, which correspond evidently to the Lenard rays, long ago described as coming through an aluminium window at a certain stage of

the vacuum tube when excited by the coil; (c) Radiations which may be identical with the X-rays.

Considering that this substance gives off emanations with such close resemblance to the phenomena which take place with the excited Crookes tube, and also in view of the therapeutic effects of X-rays, it was natural to expect a possible therapeutic effect from the application of radium. A considerable number of workers on the Continent and at home have been experimenting in this direction. The physiological effects have been studied so far both in the vegetable and animal kingdoms, but there is not yet time to speak of definite results. Mr. Henry D. Dixon¹ records some experiments upon seeds, in which he noticed a slight retardation at first when the emanations from radium fell upon them. Destructive action upon bacteria, and it is said on mice, have also been the results of continued exposure to the emanations from radium. The most striking thing, however, has been the recording of accidental or experimental dermatitis. M. Becquerel found the skin of the body injured by a small quantity of radium which he carried in a small tube in his vest pocket while giving a lecture on the substance. The writer of this article recorded² an experimental burn of the arm. In this case a few milligrams of radium in a cell enclosed by a mica front were applied for one hour. Distinct inflammation and ulceration followed, and it required *four months* before the burn was completely healed. The resulting scar shows that there has been complete destruction of the true epidermis.

Radium has been tried in a number of cases of **Lupus, Rodent Ulcers**, and other **Skin Affections**, and there can be no doubt that to a certain extent it possesses therapeutic value. Unfortunately it is difficult to get reliable data, because many of the expressions of opinion so far have appeared in the public press, and few in the medical journals. The writer satisfied himself³ that in small patches of lupus there was a distinct benefit when radium was applied near the diseased parts. In another case, however, of true epithelioma of the nose, the same quantity and the same specimen of radium which produced the burn of the arm, failed to have the slightest effect upon the true epitheliomatous mass, when applied daily for five weeks in succession. It should be here noted also, that some of the latest applications of radium in this particular case were made over a period of one hour, and in *close contact* with the tissues. At the end of this time the treatment was changed for the X-ray tube, and within a fort-

night the whole of the diseased parts had broken down and were showing evidences of a rapid healing.

It might be reasoned from this that the bromide of radium was not so powerful as the X-ray tube, but this would be a rash conclusion to come to. To begin with, the quantity is small, and probably a greater quantity of the agent would have produced different results. Further, the specimen was not one of the highest radio-activity. Indeed its radio-activity was estimated at only somewhat over 100,000, whereas specimens are now to be obtained, as we have said, of nearly 2,000,000 radio-activity. Moreover different tissues do not respond in the same way to the X-rays, and the same class of disease does not always give the same result.

The method of application is very simple. The radium can be applied by means of a glass shield, something of the shape of a watch glass, being laid over the parts, the radium itself being enclosed in a cell (with a mica front) attached to the concave side of the glass cover. These glasses may be of different depths. A very convenient arrangement has been introduced by Messrs. R. and J. Beck, whereby the radium is held in a little button with an aluminium front. This is neatly mounted in a wooden handle, but the radium itself is covered by a thick red box which protects the operator, and the button may be screwed to any required depth so as to apply the agent at a suitable distance from the skin. Further, a small quantity of radium may be introduced into cavities such as the mouth and nose, rectum, etc., and Mr. Henry A. Kent⁴ has devised a solid-drawn tube of aluminium for introducing into the cavities, the radium being held in position at the end of the tube by tight-fitting wire. In Professor Gussenbauer's clinic in Vienna a case was recorded of epithelioma of the palate and lip, in which the radium, according to popular reports, in a short space of time effected a cure.

As there are three kinds of emanations from radium, the question has been asked, which of them has the therapeutic effect? or do all of them possess this property? Inasmuch as the (*a*) rays are easily stopped by thin paper or glass, it is possible they may not have much to do with the therapeutic effect. It can scarcely be expected that the third kind of rays can account for it, because the quantity of X-rays from such a source must be very small. It is not impossible that the second or (*b*) set of rays may be the most active in this direction, and experiments on similar rays obtained from the Crookes tube,

such as the blue or violet rays described by Lenard, confirm this suggestion. In a private communication to the writer, Sir Oliver Lodge seems to be inclined to look upon this suggestion as most probable, but further experiment is necessary.

It has been suggested by Mr. Frederick Soddy that we might be able to apply the rays from radium, or perhaps thorium, in the case of tubercle of the respiratory tract. The salts of radium and thorium are constantly giving off radio-active elements, although the latter named salt is much less powerful than the former. Thus, it is considered that five minutes' application of radium salt would, *cæteris paribus*, be equivalent to ten years' application of the same weight of a thorium salt. These emanations, some of which at least may be considered gases, are small in amount, so toxic effects need not be feared, but their radio-activity constitutes a danger. Mr. Soddy suggests, therefore, that the thorium salts should be dissolved in water, and that the emanations be removed from the solution by passing a current of air through it. The nitrate is usually the salt employed, and the apparatus for giving it is easily constructed from an ordinary gas wash-bottle with inlet and outlet, a caustic potash tube being inserted in the stream so as to remove moisture or free nitric acid. There are many reasons, apart from the cost, which suggest the thorium salt for experiment, although Professor Rutherford has shown that radium and thorium spontaneously and continually give off these radio-active emanations. For example, thorium requires only a few minutes to completely restore the emanations lost, while radium might require two or three weeks.

When the gases come into contact with anything, the film of radio-active material is left behind, and is the cause of the so-called induced or excited activity produced by these elements on neighbouring objects. Mr. Soddy's idea is to allow patients to inhale these emanations, in the hope that germicidal properties may do something towards the destruction of micro-organic life in the cavities. The suggestion is based upon the hope that something of a therapeutic effect may be obtained similar to what is described as the result of X-rays when applied to malignant disease and lupus on the surface of the body. At present no definite results have been recorded, although experiments have been made in this direction.

REFERENCES.—¹*Nature*, Nov. 5, 1903; ²*Brit. Med. Jour.* June 12, 1903; ³*Ibid*; ⁴*Arch. Röntgen Ray Soc.* Oct. 1903.

Frank J. Charteris, M.B. Ch.B.

Exner,¹ in Gussenbauer's clinic, has treated two cases of **Melanosarcoma** and one case of **Carcinoma** of the mouth with radium. In each case a diminution in the size of the tumour was observed. The first case was a melanosarcoma of the upper arm with numerous metastases in the surrounding tissues. Some of these were excised, and examined histologically. The rest were subjected to the action of radium. The capsule containing the radium was fixed to the skin over the small tumours by means of sticking plaster. The exposure lasted for five to twenty-five minutes, and each tumour was only treated once. After the lapse of several hours, depending on the length of exposure, a varying degree of dermatitis was produced. This lasted for a considerable time, and was followed by a diminution in the size of the tumour. Nodules, which were exposed for a quarter of an hour, diminished distinctly, and in some cases are no longer demonstrable. The diminution was evident about a fortnight after the exposure, and in the course of the next two weeks the smaller nodules entirely disappeared. A small flat ulcer is formed in the skin which leaves a cicatrix on healing. The sarcomatous tissue seems to be more readily destroyed by the radium rays than the sound tissues. In the second case of melanosarcoma, a similar reduction in the size of the metastatic nodules was observed fourteen days after the treatment with the radium. The case of cancer of the mouth occurred in a man who had already been repeatedly operated on for recurrences. On the last occasion he came back with a large ulcerated flat-celled epithelial cancer on the lip, while a similar tumour was found on the pharyngeal arch. The lip tumour was treated with radium. To protect the radium from moisture, it was enclosed in a covering of indiarubber, and was held by the patient over the affected part. The tumour was exposed on six occasions for fifteen to twenty minutes at each sitting. There was rapid diminution in size, and within six weeks the tumour had disappeared. In this case the bromide of radium was used.

Holzkmacht reported favourable results with radium in different **Skin diseases**, psoriasis vulgaris, lupus hypertrophicus, epithelioma, and nævi. He pointed out the resemblance between the action of radium and the Röntgen rays. In psoriasis the application of a capsule containing radium for one minute was sufficient to cure a patch of psoriasis. A case of lupus

hypertrophicus was subjected to radium for seven minutes, and a nodule the size of a pea shrivelled up as after exposure to Röntgen rays. The radium treatment can be used instead of the Röntgen rays, wherever the application of the latter is difficult, as in the interior of the mouth and nasal cavities. The radium rays cause much greater degeneration in the cells of the blood vessels than the Röntgen rays. The intima is specially affected. This was strikingly shown in a case of nævus, involving the whole arm. Eight small portions were exposed, each for ten minutes, to the radium rays, while the remaining parts of the nævus received almost no rays. As a result, there are now eight small circles of perfectly normal white skin in the midst of the port-wine nævus. If these results prove permanent, they will constitute a great advance in the treatment of birth-marks. Röntgen rays in such cases only cause slight blanching.

Pfeiffer and Friedberger² using only 15 mg. of bromide of radium, have found that even this minute quantity gives an intense action. Twenty-four hours' exposure had no effect on typhoid and cholera cultures when the radium was at a distance of 6 to 10 c.m. If the radium was brought nearer, the growth of the bacteria was distinctly checked. For anthrax a more prolonged exposure was required.

Danysz³ has shown that radium destroys the skin of guinea pigs and rabbits, while the subcutaneous and muscular tissues do not seem to be so sensitive. The nervous system appears to be fairly sensitive: thus the application to the skin over the spine of a sealed glass tube containing radium salts is followed by death in the case of young animals. In older animals, the osseous tissue protects the cord against the effects of the rays. Both Danysz and Bohn have shown that the growth of various larvæ and embryos is profoundly modified when exposed to the radiations. Many were killed, while others developed into monstrosities, as the result apparently of unequal stimulation. Bohn found the same action on proliferating cells and tissues. Non-fertilized eggs may undergo more or less parthenogenetic development, and give rise to atypical formations. Then in animals, after the skin has been burnt by the rays, the hair seems to be stimulated to rapid growth. The result obtained apparently depend on the tissue or cell exposed, as well as on the quantity and quality of the rays.

It has been claimed that totally blind people are able to see

radium light. Thus they may be able to see the phosphorescent radium screen, and silhouettes of coins, etc., on it. One explanation frequently put forward is that this may be due to the direct penetration of the rays through the tissues stimulating any fibres which remain intact in the optic nerve. Holzknecht and Schwarz¹ believe that it is due to the transformation of the energy of the radium-rays into phosphorescence. Radium possesses this power of producing phosphorescence in other bodies to a remarkable degree. Without the use of any chemical reagent or screen, all animal tissues, hairs, bone, muscle, but especially the human epidermis, are rendered phosphorescent by radium rays. They point out that when the radium is placed to the right side, the light perceived is located to the right. They explain this by supposing that the right half of the sclerotic is rendered phosphorescent, and this is then seen by the retina on the opposite side.

London⁵ furnishes some further observations on the effects of this marvellous body. Sealing wax rubbed with flannel acquires the property of attracting small pieces of paper. If it is passed over a box containing radium, this power is lost. He shows the toxic effect of radium on mice. The animals were confined in glass dishes covered with a sheet of perforated zinc. The radium, in a box made of guttapercha and metal, was placed on the cover. Under symptoms of paralysis of the nerve-centres, the animals died in four or five days. Controls kept similarly confined, but not exposed to radium, remained healthy. On the human skin radium causes dermatitis. Arterial blood is darkened in colour under the influence of the rays. Blind people who are slightly susceptible to light have the susceptibility increased when radium is brought near to the eye. Sound eyes, even if bandaged, can detect light when radium is brought within 10 to 15 centimetres of the eyes. Microscopical observations may be made in a dark room with the radium rays.

REFERENCES.—¹*Münch. Med. Woch.*, No. 28, 1903; ²*Berlin. klin. Woch.*, No. 28, 1903; ³*Compt. rend. d. l'Acad. d. Sci.*, cxxxvi, 1903; *Edit. Jour. Amer. Med. Assoc.*, Aug. 1, 1903; ⁴*Wien. klin. Woch.*, vol. xvi, No. 25; *Jour. Amer. Med. Assoc.*, Aug. 1, 1903; ⁵*Berlin. klin. Woch.*, June 8, 1903; *Month. Cyclop. Med.*, Aug., 1903.

HIGH-FREQUENCY CURRENTS.

During the past year a great deal has been said of the benefits of high-frequency and high-potential currents in many affections. The profession is greatly indebted to Dr. Denoyes of Paris, for

his excellent work on high-frequency currents. The results recorded, and which have been obtained by D'Arsonval, Tuerton, Tuillaume, and Tripet on the circulation, respiration, and secretion, by means of these are worthy of careful study. It is generally claimed for these currents that they produce analgesia, changes in the arterial tension, and increased activity in the action of the skin and in the respiratory and secretory organs. Further, in many of the affections in which good results have been obtained by X-rays and light treatment, cases have been improved by means of these currents also; but during the past two years the impression has been steadily gaining ground that we are in danger of suffering somewhat from the statements of the lay press, more particularly owing to the claims which were advanced for extraordinary results obtained in malignant disease. The editorial columns of the *British Medical Journal*¹ have drawn the attention of the profession particularly to this point, and there can be no question that exaggerated ideas of the results of treatment have been too widely spread by such incorrect statements. There is no doubt that high-frequency currents have cured certain cases of **Lupus**, and such epithelial affections as we include under the term **Rodent Ulcer**. Improvement in general health has been frequently noted in patients suffering from even deep-seated and malignant disease, when subjected to high-frequency currents; but when the cases are fully analysed, it is exceedingly difficult to find any true record of malignant disease in the deep-seated cavities of the body which, after microscopic examination, have been proved to be cured.

REFERENCE.—¹*Brit. Med. Jour.* June 6, 1903.

HIGH-FREQUENCY METHODS IN SKIN DISEASE.

Norman Walker, M.D.

With improvements in the apparatus whereby one can obtain larger *effleuves* and practically painless treatment, the application of high-frequency methods in dermatology has become more general. Regnier¹ states that the peculiar property of these waves is that, without producing any appreciable contraction of muscles, they modify sensibility even to the extent of setting up anæsthesia, and further modify the circulation of parts, draining away effete inflammatory products, and therefore are useful in local inflammations and in cases of impaired nutrition. We mention his results, but further confirmation is desirable. **Pruritus** is frequently improved, and **Psoriasis** often does well,

but in **Eczema** the results are more constant, especially in the weeping form, where itching sometimes disappears after the first application. **Alopecia**, **Zona**, **Morphœa**, **Acne**, **Rosacea**, **Impetigo**, and **Molluscum Contagiosum** have been favourably influenced. **Lupus Erythematosus** may be cured, but *lupus vulgaris* is not so favourably affected. He concludes that the effect is partly due to the liberation of ozone.

Somerville gives an account of some successful cases. A lady, æt. fifty-five, with **Psoriasis** widespread, but especially in evidence over the lumbar and gluteal regions and lower limbs, was cured after twenty-four séances, and there was no recurrence twelve weeks later. Two cases of **Lupus Erythematosus**, one of **Rodent Ulcer**, and one of **Acne** had also been successfully treated by him. He treated his patients by the method of auto-condensation, on an insulated couch, where the patient takes the place of one of the coatings of a Leyden jar.

Chisholm Williams³ uses general electrification, with low-vacuum glass electrode locally, and gives ten minutes of the former and five minutes of the latter. He notes a reaction occurring after one exposure, often similar to that produced by X-rays, but considers this method is quicker and more under control than the older method. Two cases of **Lupus Vulgaris** are cited as successful results, and as the majority of his patients were drawn for experimental purposes from the poorer classes, he considers that general electrification acted on the malnutrition present. *Lupus erythematosus*, chronic *eczema*, *acne*, *rosacea*, *pityriasis*, *psoriasis*, warts, *pruritus ani*, ulcers, and rodent ulcer, are also mentioned as capable of successful treatment by this means.

REFERENCES.—¹*Le Progrès Med.* May 17, 1902; ²*Méd. Electrol. and Rad.* April, 1903; ³*High-frequency Currents*, Rebman, Ltd.

LIGHT TREATMENT.

One of the most interesting works yet published upon these subjects was produced during the past year by Prof. Dr. Niels Finsen himself.¹ The paper is interesting, not only because it deals with his methods, but—what is of the greatest interest to the profession—a list of cases is given, beginning with the year 1895 and finishing in 1901. In all, the author gives tabulated results of 800 cases of **Lupus** treated in different parts of the body. If there had been the slightest possible doubt that light could improve the tissues in this terrible affection, it would be dispelled by the published results. Prof. Finsen is to be congratulated

upon this most valuable production, for not only are the results fully described, but a series of 48 plates are included in the book, and when one looks at the terrible deformities before treatment, and compares them with the splendid results after, it is impossible to minimize the importance of his work.

Prof. Finsen² likewise calls the attention of the profession to the beneficial results of *red light* in preventing the pitting of **Small-pox**, so that in this department, as well as in the other, he has persistently and conscientiously advocated his original views, which, as is now well known, were founded upon most careful experimental research.

Notwithstanding the brilliancy of Prof. Finsen's work, there are certain conditions of the body which do not permit of the full application of his methods. For example, the mucous membranes of the nose and throat cannot be attacked by the large lamps devised by him. Many ideas occur in connection with this important question, and the unfortunate nature of this defect is very much emphasised by a paper of Christiansen.³ In this important communication he states that as Oto-laryngologist at the Finsen Light Institute, he has found that in 1000 cases of lupus examined, three-fourths showed manifest signs of lupus vulgaris of the mucous membranes. Now wherever one can use the compress-glass, light-treatment for lupus of the mucous membranes is applied just as if we were treating the skin. Thus, it can be applied to the gums, the vestibule of the nose, and the tongue; but he adds significantly, "there is, with our present technical arrangements for light cure, no possibility of applying such treatment to the more remote parts of the mucous membranes. Even with well-adjusted compress-glasses, or these assisted by the effects of adrenalin, the light treatment will not produce the desired effect in the deeper portion of the tissues, all of which is due to mere technical difficulties." In other words, Prof. Finsen is then forced to apply to other methods of treatment and to discard the light rays. Now, by high-frequency and X-ray treatment many of these lesions in the mucous membranes can be quite well reached; and consequently, to that extent at least, these two methods possess advantages over Finsen's light.

Another thought, however, demands consideration. It has been proved beyond doubt that lupus of the mucous membranes in these cavities has been improved, and in many cases the disease has wholly disappeared, under X-rays. We also know

that many cases of lupus of the superficial parts have been cured by the same agent. If, therefore, the X-rays can do this in both these conditions, the question naturally arises how far the one method will displace the other. That doubts have been growing in many minds as to the best method of treatment to select in given cases, is evident from the literature. Moreover, physicians and surgeons are beginning to ask, Why should we be troubled with two installations of such a complex nature, if one can do the work of both.

This question has been answered in two ways. Some writers, like Malcolm Morris, speak in the highest terms of the advantages and permanency of the cure of lupus by means of the light rays; while others have found that the X-ray treatment is the more useful and powerful of the two. This question was put to Prof. Finsen himself by the writer of this article; and in a communication to him upon the subject he states that, notwithstanding the many new kinds of apparatus and lamps, he considers his own the most powerful, as far as he has been able to judge from examinations made in the Finsen Institute. Further, Prof. Finsen points out that he gives longer sittings with stronger lamps than those who are employing the new lamps, and therefore he is not surprised that he gets better results. The smaller lamps as a rule have only one advantage, viz., they are cheaper. Prof. Finsen makes these statements so far as lupus vulgaris and rodent ulcers are concerned; but in cases of nævus and superficial disorders, the shorter sittings he thinks may do well enough. Such a statement, while explaining how different workers get different results, does not help much by way of solving the problem of the comparative advantages of X-ray or other agencies, and the Finsen light treatment. The time for comparison has scarcely arrived; but inasmuch as most hospitals are fitting up installations, the importance of the question cannot long be overlooked.

REFERENCES.—¹*Meddelelser fra Finsens Medicinske Lysinstitut*, Copenhagen; ²*Ibid.*, July 12, 1903; ³*Brit. Jour. of Laryng., and Otol.* for October, 1903.

RED LIGHT.

Frank J. Charteris, M.B. Ch.B.

Finsen¹ claims that in most cases of **Smallpox**, including even confluent ones, suppuration does not occur if the patients are withdrawn at an early stage from the influence of daylight. The best way to do this is to cut off the chemical rays by the use of red curtains or red window glass. This treatment has

no effect in shortening the course of the disease, but it prevents suppuration and the resultant deep pitting. He claims that by the exclusion of ordinary light the mortality may be reduced by one half.

Naunyn² has used Finsen's plan with considerable success. By means of blinds and curtains over the doors, the chemically active rays were excluded, and the extensive suppuration of the pustules ceased. The general condition and temperature chart were favourably affected. Only one case, a severe confluent type, succumbed. Naunyn thinks that there is no doubt that the red light treatment is of value, but he insists on the necessity of really excluding the chemically active rays. The ventilation requires particular attention.

Another observer who is convinced that the exclusion of the chemically active and ultra-violet rays lessens suppuration, is Baer.³ He used thick red curtains carefully nailed over the windows. Examination with the spectroscope showed that only red rays passed through. All examinations of the patients were carried out with candle or lamp light. The cases treated were fairly severe types. The effect of the red light was unmistakable. In several cases there was no secondary suppurative fever. The rapid drying up of the vesicles was very noticeable. Two fatal cases died apparently chiefly from the involvement of the mucous membrane, on which the red light treatment has no effect. In these two cases, however, the cutaneous vesicles remained serous. The danger of severe pitting is certainly diminished. Finsen states that where only a few vesicles are becoming pustular, the red light treatment prevents the remaining vesicles becoming pustular; but in one case of Baer's this effect was not obtained, and the pustulation involved the remaining vesicles, although there was no rise of temperature.

Reinoso, at the International Congress of Medicine, held at Madrid in April, 1903, read a communication on the treatment of **Measles** by Finsen's plan. The exclusion of the white rays has a distinctly favourable effect on the conjunctivitis. The red light treatment is purely symptomatic. It has no effect in shortening the course of the disease, nor are complications prevented.

REFERENCES.—¹*Brit. Med. Jour.*, June 6, 1903; ²*Münch. Med. Woch.*, No. 31, 1903; ³*Ibid.*, No. 42, 1903.

Part II.—The Dictionary of Treatment.

A REVIEW OF MEDICAL AND SURGICAL PROGRESS
FOR 1903.

BY MANY CONTRIBUTORS.

GENERAL REVIEW.

GENERAL MEDICINE.—No epoch-making discovery can be chronicled for the past year, but none the less the production of sound original work in all departments shows no abatement. Progress in the diagnosis of disease seems to be retarded at present for lack of new instruments and methods, particularly chemical methods capable of easy application at the bedside ; for it is only by the "popularisation" of methods that a sufficiency of observations can be made to admit of trustworthy conclusions being drawn. It is owing to the comparative simplicity of the methods of investigation, that our knowledge of blood diseases has made such enormous progress in recent years, and it is much to be wished that methods of chemical investigation could be equally simplified. It is for this reason that one welcomes the invention of such an instrument as Walker Hall's purinometer, which promises to facilitate greatly the clinical investigation of that "uric-acid group" of diseases, regarding which we are still so much in the dark.

No definite results have yet come out from the labours of the Cancer Commission, despite many popular rumours to the contrary ; and the dispute between the experts as to the inter-communicability of human and bovine tuberculosis remains still unsettled.

As regards diseases of the heart and lungs, slower progress is being made, but the pathology of the myocardium and the bacteriology of endocarditis still attract much attention. Our knowledge of the etiology of renal disease seems to be almost at a standstill ; but the results of recent attempts to deal with nephritis by surgical methods will be awaited with deep interest. Credit for progress in abdominal disorders still lies mainly with

the surgeons, but in the article on diseases of the colon, some valuable medical work on this subject will be found, whilst as regards tuberculous peritonitis, there has been an interesting recrudescence of belief in favour of the efficacy of medical treatment. In the articles on acromegaly and exophthalmic goitre a good deal of new material will be found relating to the etiology and pathology of these obscure disorders.

The year has not witnessed any striking therapeutic innovation. We seem to be gradually finding out the limits of usefulness of "light" treatment in all its phases, though the recent physical discoveries with regard to radium have raised further hopes, which it will take prolonged investigation to confirm or dispel. The so-called "intra-venous medication" has also excited a good deal of attention in therapeutics of late, and many references to it will be found in the article on the treatment of septicæmia.
[R. H.]

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INFECTIOUS FEVERS.—The prospects of serum treatment, both in scarlet and typhoid fever, appear encouraging, but convincing clinical evidence is still wanting. In the latter disease acetozone is a drug that promises good results. Adrenalin chloride, for the intestinal hæmorrhage in typhoid fever, was last year mentioned as being upon its trial. I am sorry to say that having during the past few months had the opportunity of employing it in some severe cases, I have had to confess myself disappointed.

A few more successful cases of laparotomy and suture of the perforated intestine in typhoid fever have been published.

In smallpox the treatment by keeping the patient in a red light has been advocated, notably by Finsen. But again, up to the present time the clinical evidence in favour of this mode of treatment is very scanty.—[E. W. G.]

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LUNG DISEASES.—The pathology of asthma has been very thoroughly worked out by Brodie and Dixon, for whose views the reader is referred to the text.

That the large majority of pleurisies are of tubercular origin has been emphasised by several writers, and the importance of recognising this fact is evident from the point of view of prognosis and treatment. Immediate tapping of pleuritic effusions

has been recommended by some as lessening the subsequent tendency to tuberculosis : and others have practised the removal of the fluid, substituting for it filtered, sterilized air.

The Croonian lectures on pneumonia by the late Dr. Washbourn are full of interesting matter, and greatly advance our knowledge as to the pathology of, and possibilities of conferring immunity against, this disease. There is little to add as to treatment, except that, as the infectious nature of pneumonia becomes more recognised, writers are more insistent on the necessity for appropriate prophylactic measures being taken.

The controversy as to the relationship between human and bovine tuberculosis has given rise to the publication of many experimental investigations and collections of cases bearing on this point. It cannot be said that the matter is definitely settled one way or the other. Koch still holds the same view, but there are many authorities strongly of an opinion almost diametrically opposed to his. As to the treatment of pulmonary tuberculosis, the "open air" or sanatorium treatment has still shown the best results ; but it is becoming increasingly felt that there is a great necessity for the systematic treatment of such cases as are unable, or unfitted, to benefit by it. [W. J. H.]

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NERVOUS DISEASES.—The pathology and treatment of epilepsy have been discussed afresh, and more extended observations have been recorded, especially with regard to the dietetic treatment of the disease. The results of withdrawal of common salt from the diet of epileptic patients have been, on the whole, encouraging. The medicinal treatment remains much as before, whilst Ceni's serum-therapy can hardly yet be regarded as beyond the experimental stage.

The various acute palsies which may occur in infancy are now being recognised as not infrequently due to a microbic affection attacking various parts of the central nervous system (*see* "Infantile Paralysis"). Such a view considerably simplifies our conception of this class of diseases.

Lumbar puncture has proved of considerable value for diagnostic purposes, though its therapeutic effects, as yet, are limited.

Lott's hyoscine treatment of the morphia habit has been more extensively tried, and most of the reports have been distinctly favourable as to this method of treatment.

The treatment of tetanus by anti-tetanus serum has been successful in rescuing a number of cases which otherwise would certainly have gone on to a fatal termination. When such serum is not available, Baccelli's method of injection of a 2 to 3 per cent solution of carbolic acid should be borne in mind, in view of the good results recorded by Italian observers.

There can be little doubt that many cases of so-called "typhoid spine," hitherto too often regarded as merely functional or hysterical, are really due to a true spondylitis or inflammation of the vertebræ. This fact should modify the treatment of such cases in future.

The number of analgesic drugs, for the relief of various painful conditions, still continues to increase. More detailed reference to these will be found in the articles on headache, migraine, sciatica, etc.—[P. S.]

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GASTRIC DISORDERS.—The most marked advances during the past year in the treatment of the different forms of indigestion, have been in the application of electricity and other mechanical methods to this end. Electric currents of high frequency and high potential, by which is meant very rapid alternations of the polarity and great penetrating power without much quantity, have been more and more largely employed, especially in France and England, in atonic dyspepsia, and especially in those forms of indigestion dependent upon constipation. In the United States more has been done with static electricity, especially the Morton electrostatic currents, and other mechanical methods, in the treatment of these atonic gastric and intestinal troubles; such methods including mechanical vibration and digital pressure along the spine, to influence the circulation and secretion in the viscera through the vasomotor nerves and sympathetic system generally. Then there has been a veritable gymnastic craze among the Americans, which has driven large numbers of dyspeptic patients into the hands of the trainers and physical culture faddists. This has doubtless caused a considerable loss to the regular medical profession; but it seems as if only by such hard knocks many of us can be forced away from ultra-conservatism and a too slavish dependence upon drugs in the treatment of disease. Even some specialists in gastro-intestinal lines have yet to learn that good digestion depends very largely upon a sufficient development and regular use of

the muscles; that the interdependence between the digestive and nervous systems is so great that the one cannot be deranged without the other suffering also; and that, therefore, when the digestion becomes chronically disordered, it can often be best remedied by whatever means—mechanical or otherwise—will most readily restore tone to the muscular and nervous systems. Properly regulated exercise will do much to effect the end desired, and the work can be hastened by a skilful employment of local stimulation of the viscera involved, or the nerves supplying them, by some one of the means above-mentioned.

Excepting cancer, no form of indigestion is more painful than that which results from ulcer of the stomach. With the increasing aggregation of people in cities and the resulting debilitating conditions, gastric ulcer as well as cancer seems to be growing more frequent. Certainly the number of contributions to medical literature upon the subject is becoming larger every year. No really important new method of treating ulcer has been brought forward, dependence still being placed the world over among the best informed internists, upon **Rest** with **Rectal Feeding** mainly, assisted usually by large doses of **Bismuth** in the recent cases, and upon operative measures in those older aggravated cases in which this method has failed. A suggestion that olive oil be fed to patients with ulcer of the stomach is however worthy of notice. [B. R., W. E. R.]

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TROPICAL DISEASES.—In tropical medicine during the year 1903 advance has chiefly been made in the parasitology of the trypanosomes and of sleeping-sickness. During the past ten years the disease met with in cattle, horses, mules, dogs, camels, buffalo, and other animals in India, and known as *surra*, has been carefully investigated by Lingard; *nagana* is the name by which a similar affection is known in South Africa; *dourine* is the name given to the disease in Algiers; and in Paraguay it is known as *mal de caderas*. In all these countries the horse is the animal in which the ailment has mostly been noted, and in South Africa it is known as horse-sickness or tsetse-fly disease. The blood-worm, known as the trypanosoma, has been proved by Lt.-Col. David Bruce to be the cause of this sickness in the horse, and the tsetse-fly has been shown by him to be the carrier. In 1898 Nepveu evidently discovered trypanosomes in the blood of human beings; but it was not until 1902, when Forde met

with a parasite in the blood of a patient in Gambia, W. Africa, that the subject of human trypanosomiasis was carefully studied. Dutton saw and recognized the parasite found by Forde as a trypanosome. The patient, a European male, was brought to Liverpool, where his symptoms were carefully noted, the signs of the disease recorded, and the pathology of the affection worked out. Manson met with another patient from the West African Coast suffering from trypanosomes in the blood, and from clinical symptoms of a marked character. Since then several patients have been found suffering from the disease.

The connection between trypanosomiasis and sleeping-sickness was discovered as follows: From the Uganda district it was reported that a disease, new to that region of Africa, had broken out amongst the natives, and was causing very considerable mortality. The symptoms pointed to the disease being allied to, or actually identical with, the sleeping-sickness of the West Coast of Africa, and a commission was sent out from this country by the Royal Society to investigate the disease in Uganda. One of the commission, Dr. Castellani, found trypanosomes, not only in the blood of sleeping-sickness patients, but also in their cerebro-spinal fluid. Subsequently Lt.-Col. Bruce was sent out to Uganda, also by the Royal Society, and not only confirmed Castellani's finding, but advanced proof, which would seem to be conclusive, that the tsetse-fly, the *glossina palpalis*, is the carrier. Two cases of sleeping-sickness were brought to London by Manson in 1901, and their pathological anatomy was carefully investigated by Mott. Three cases were lately brought to Paris from the Congo, and their condition carefully watched. In November, 1903, a patient of Manson's, a lady from the West Coast of Africa, in whom trypanosomes had been found in the blood, died of sleeping-sickness in England. This last observation is of great importance, as hitherto it was believed that although trypanosomes occurred in the blood of Europeans, they did not suffer from sleeping-sickness. It is now proved that they may do so, and that the presence of the parasite in the blood is only a preliminary stage to the appearance of true sleeping-sickness would seem to be probable. The solution of the problem awaits further confirmation; but it would appear that the trypanosoma only causes sleeping-sickness when the parasite has reached the cerebro-spinal fluid of the sufferers.

Another discovery in tropical ailments which may be of great importance, is the fact that the domestic animals almost

without distinction, in plague-affected districts, suffer from plague, or at all events have the plague bacilli in their blood. In connection with plague, also, the heroic doses in which carbolic acid can be tolerated by the human economy has been proved. In Hong-kong doses amounting to 144 grains of pure carbolic acid in twenty-four hours were given to plague patients, and for many days this quantity was continued. The effect on the plague patients would appear to have been satisfactory, but still more extraordinary is the therapeutic lesson the treatment has taught us.—[J. C.]

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GOUT.—The number of papers upon the subject of gout which have appeared during the past year has been exceptionally large, and the conflicting views put forward by the authors will be found in subsequent pages. Among those to which we would direct particular attention is Dr. Toogood's highly original account of the disease as it occurs among the poor; this contains a strong and, it appears, well-proved indictment of malt liquors as an all-important cause. With regard to pathology, there is such absolute divergence of opinion that the practitioner can do nothing but draw inferences from the evidence adduced, and test such conclusions as far as possible by practical experience. There is for instance an entire difference of opinion as to whether uric acid given by the mouth increases that found in the urine. Dr. Haig, as is well known, maintains that it does, and proceeds to argue that articles of diet such as flesh and tea are direct poisons. In this respect the consensus of opinion is against him, and Dr. Luff goes so far as to call those whom these foods harm "physiological degenerates." The various aspects of the different modes of treatment will be found fully summarised in the article. There is a general tendency to forbid alcohol except for special reasons, and the use of quinic acid derivatives appears to be gaining favour.—[B. A.]

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ARTHRITIS.—Recent research as to the etiology of arthritis deformans or rheumatoid arthritis tends still more to emphasise the view that it does not own a single uniform cause. Three chief types must be recognised; the acute form, the multi-articular form occurring chiefly in middle-aged women, and the uni-articular or senile variety. Of these the first is obviously a

form of synovitis, as is shown by Dr. Hale White's interesting case. In this respect, at any rate, the disease described by Still in children is allied to it. The second type is the one to which the name arthritis deformans should be restricted; it is believed to originate in the articular cartilages, though recent observations upon this point are lacking; it affects many joints, including those of the hands and feet, and manifests what Charcot called a centripetal tendency. The last form occurs chiefly in the hip joints of old men, and is associated, as a rule, with bony atrophy to it the name osteo-arthritis is frequently applied. That micro-organisms have been found in the joints in arthritis deformans cannot be doubted, but there is at present virtually no evidence that they are the cause of the disease. Poynton and Paine's discovery of a diplococcus in this affection, which was identical with that found by many observers in acute rheumatism, proves, if anything, either that the two diseases are identical, which is absurd, or that the microbe is not the cause of either. It is to be hoped that advancing knowledge will enable us to classify the various affections grouped under this title, with a view to their rational and systematic treatment.

Since the appearance of the last issue of the *Medical Annual* several important papers and addresses upon infective non-rheumatic arthritis have appeared. The infective causes of arthritis are being carefully studied, and their classification and recognition is making considerable progress. Though treatment must perforce be mainly surgical, advance is also being made in the direction of attacking the source of infection.—[B. A.]

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RHEUMATISM.—It cannot be said that our knowledge of the etiology of this disease has been appreciably advanced during the past year. It is not yet proved that a micrococcus or any other organism is the specific cause of rheumatic fever. Of the microbes found in association with the disease, the streptococcus first described by Triboulet is still receiving most attention, and in this respect the work of Meyer is of considerable importance; while the discovery made by Ainley Walker, that cultures of this micro-organism contain formic acid, has an important bearing upon the clinical aspect of the malady. With regard to diagnosis, the nature of the septic forms most closely allied to acute rheumatism is being carefully studied. It may be added that the classification put forward in the *Medical Annual* for 1903, is now becoming generally adopted.

As regards treatment, much attention has been devoted, especially by Menzer, to the study of antistreptococcic serum in connection with the disease. It is noteworthy that Menzer does not accept a specific streptococcal theory as to its origin. Other observers, however, have found the serum of but little use. Aspirin appears to have established its place as a substitute for sodium salicylate in certain cases, and the use of salicylic acid, or of oil of wintergreen in the form of ointment, is much advocated. O'Connor has recommended arthrotomy in acute cases. The action of salicylates upon the heart has also been the subject of debate.—[B. A.]

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KIDNEY DISEASES AND DIABETES.—In this department of medicine perhaps the most novel departure, although not the least questionable, is that of operation for acute Bright's disease; although some of those who advocate surgical interference disclaim the notion of operating in bilateral inflammation of the kidney, and restrict their suitable cases to those in which one kidney only is involved. However, in the United States the operation of stripping off the capsule of the kidney, or decortication, has been performed with a view to remedying cases of chronic Bright's disease which have resisted other means, but the results do not seem to have been strikingly successful.

Considerable discussion has been re-opened on the dietetic treatment of Bright's disease, the result being to deprive white meats of any fancied superiority over red for this condition; but the net result goes rather to confirm the belief that where the excretory function of the kidney is deficient, it is safer to restrict the patient to white fish.

There has also been a useful ventilation of the question respecting the use of bleeding and morphia in uræmia; the conclusions tending rather to diminish the reputation of bleeding except where the right side of the heart is evidently oppressed, and to restrict the utility of hypodermic injections of morphia to the uræmic convulsions of acute nephritis and the paroxysmal dyspnœa of the chronic form; though in the latter case the remedy must be used with caution, and in the former it is safer to give chloroform by inhalation.

In diabetes, some further light has been thrown upon its relation to the pancreas, and the various conditions of non-diabetic glycosuria have been illustrated and set in a clearer

light. The pathology of bronzed diabetes has been carefully stated, and a rational explanation given of it, though time must show whether it is a sound one. No new drugs have received any striking support, but aspirin in large doses has proved useful in certain mild cases. Good results have been obtained with urotropin in diabetic coma.

In the treatment of oxaluria, the value is again affirmed of small doses of sulphate of magnesia, when combined with a careful dietary.

A note of warning needs to be sounded as to the diagnostic value of hyaline casts in the urine when found by the centrifuge; as numerous observations show that they are frequently present in albumin-free urine, and it is evident that the centrifuge finds too much.—[R. S.]

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DISEASES OF CHILDREN.—The interest manifested at the present time in infant feeding as a matter of national importance has brought out much valuable information and suggestion within the past year. Not the least valuable has been a report on the milk supply of large towns in England, showing that milk is collected from country dairy farms under filthy conditions; that it travels to town often insufficiently protected from heat and contamination; and that its delivery to the retail customer may be delayed for twenty-four hours or even longer after milking. Much emphasis has been laid on the need for thorough and competent inspection of dairies, to ensure the supply of clean new milk which can be used for infant feeding without the injurious sterilisation which is often necessary at present. The changes which result from the boiling of milk are not yet fully understood; but recent investigations have made it clear that the milk is altered in many more respects than was formerly supposed, and it is the opinion of many, including the present writer, that the boiling of milk interferes with its nutritive value. Amongst various methods of infant feeding which have recently been brought into prominence, the use of butter-milk, and also of curdled milk, may be specially mentioned.

The discovery of the bacillus of dysentery (Shiga's bacillus, in the summer diarrhoea of infants, has raised hopes of possible prophylaxis, either by preventing infection, or by the use of a serum, which has already been found protective in guinea-pigs.

More practical perhaps than this as a means of combating the frightful diarrhoea mortality among infants in the summer months, is the sale of carefully modified and pasteurized or sterilized milk by the municipal authorities, which has been commenced this year, and is now being tried in various parts of the country.

The treatment of congenital hypertrophy of the pylorus, which until recently was regarded rather as a pathological curiosity than as a condition which might come within the range of therapeutics, has recently been under consideration. This condition has now been shown to be not merely capable of relief, but actually curable, in some cases by medical, in others by surgical treatment; and since it has become more widely known, its occurrence has been recorded so many times that there can be little doubt that it is no such extreme rarity as was formerly supposed.

In the treatment of whooping-cough one of the latest inventions is an "anti-pertussis serum," but its value has yet to be confirmed. A mechanical mode of treatment by traction on the lower jaw has also been advocated lately.

The treatment of chorea by large doses of salicylates has recently been advocated by Dr. D. B. Lees. The drug is combined with large doses of sodium bicarbonate, and excellent results are recorded. Ergot also, in full doses, has recently been recommended for chorea by Dr. Eustace Smith.

A new and interesting light has been thrown upon the pathology of cyclic or recurrent vomiting in children. It had been supposed that it was closely allied perhaps to migraine, but no more definite relation had been discovered. Recently several American observers have confirmed the observation made by Marfan that acetonuria is present in these children during the attacks; and out of this observation has arisen a suggestion by Dr. D. L. Edsall that large doses of sodium bicarbonate may prove both preventive and curative. As far as this method of treatment has been tested, it has already yielded good results.

There are distinct indications that in this country views on the treatment of tuberculous peritonitis are changing, and the much-vaunted success of laparotomy is being more and more discredited. Important statistical evidence in favour of non-operative treatment has recently been brought forward by

Dr. Sutherland, and Dr. L. Guthrie has also thrown doubt upon the advisability of operation in the majority of cases of tuberculous peritonitis. [G. F. S.]

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NOSE AND THROAT.—No very startling discoveries have been made in this province during the past year, but there has been steady progress in various directions. The method of paraffin injection for the correction of "saddle-backed" and other deformities of the nose has now been extensively employed, and from the numerous reports that have been published it is possible to form an idea of its value and of the best method of performing it. It is undoubtedly the most valuable means at our disposal for the correction of these deformities, and its performance is almost free from danger or risk, still it is a method which should never be lightly undertaken, and when carelessly employed disaster may easily follow. The paraffin used should have a melting-point above 108° F, but not more than 115° F, and full antiseptic precautions should be employed. Paraffins with a higher melting-point are extremely difficult to handle, and allow the operator too short a time in which to mould the nose. Further, they excite a considerable amount of local irritation, and may even cause discoloration of the skin. When a paraffin of too low a melting-point is employed, should the patient's temperature rise the mass is apt to become fluid and may be absorbed; it is also far more liable to spread into neighbouring tissues and even to cause embolism. The greatest danger of the operation seems to be that the paraffin may not be confined to the region intended, but may spread up on to the forehead or into the eyelids. Thus solid infiltration of the upper eyelids has occurred in more than one case, and required subsequent operations for its removal. The lumps on the forehead have also greatly detracted from the cosmetic effect of the operation. In some cases too much paraffin has been injected, and has given rise to the most unsightly deformities. It is always better to do too little rather than too much; a second or even a third injection may be carried out without harm, but if too much have been injected it is very difficult to remedy.

Injectations of melted paraffin have also been employed in the treatment of that most intractable disease, atrophic rhinitis. They were independently introduced by Lake and Brindel (of Bordeaux). It is yet too early to speak definitely of their value,

but they seem to fulfil one indication for the cure of the affection, viz. : the restoration so far as size is concerned of the atrophied inferior turbinates. The introducers speak most highly of their success by this method ; but remembering that every year produces at least one cure for this most wretched affection, we may well withhold our judgment. Still this last method seems rational, and we may at least hope it will prove of some value.

The subject of suppuration in the accessory sinuses has also been to the fore, and here it seems as if some final conclusions have been reached. The good points of various operations have been combined, until finally a standard operation has been elaborated. It may well be that in the future the treatment of these most difficult cases may be rendered easier and more certain.

Quite recently the treatment of laryngeal cancer has been again brought forward. The value of thyrotomy in early cases has long been established, but many surgeons and specialists have been doubtful of the advantages of complete removal of the larynx in more advanced disease. When there was extensive involvement of the glands, or disease affecting both the larynx and pharynx, the case has generally been held unsuitable for operation. Glück, however, has recently published a series of such excellent results in which he has removed not only the larynx, but also in some cases parts of the pharynx, the whole or most of the thyroid gland, and extensive lymphatic enlargement, together with portions of the internal jugular veins, carotid arteries, and even the vagus nerve, that this question must be reconsidered. His immediate results have been excellent, and in some cases a cure has been obtained ; still it must be remembered that patients after this operation are in a most unfortunate condition, and the operation in this respect cannot be compared with thyrotomy.

An event of the year has been Killian's demonstration of his method of bronchoscopy and œsophagoscopy. He uses straight tubes, which he introduces either through the mouth or through a tracheotomy wound, and which he can pass not only into the œsophagus and trachea, but even into the bronchi. By this means even the second and third divisions of the bronchi can be examined by direct illumination, and the existence and position of foreign bodies in them can be determined. Killian also showed a series of small hooks, forceps, etc., which he has devised for the removal of foreign bodies in these positions. He himself

has undoubtedly had some brilliant successes, but it is doubtful if his methods will come into general favour. They require a set of complicated instruments, high training on the part of the surgeon, and especially great tractability, patience, and endurance on the part of the patient.—[H. L. L.]

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VENEREAL DISEASES.—Each year further evidence accumulates to show that the gonococcus, far from limiting its activity to the urethra, may secondarily attack almost any part of the body. On a later page will be found a short excerpt from a very careful report by Dr. Harris on a case of gonorrhœal endocarditis in which the gonococcus was obtained from the blood during life. Two forms of gonorrhœal osteopathy have now been described—an acute and a chronic—and Philippet describes their symptoms in an interesting paper. Cases of gonorrhœal polyneuritis, gonorrhœal peritonitis, and gonorrhœal urticaria, all give increased evidence of the power of metastasis of the gonococcus.

In the treatment of gonorrhœa, continued effort is being made to produce a drug for local application which will destroy the gonococcus without producing irritation of the urethral lining. Development on the lines of the organic compounds of silver is taking place, and Argyrol (silver vitellin) is the latest addition to the series.

Thermo-therapy has been introduced into the treatment of gonorrhœa, but information on this subject is as yet scanty. There are signs of reaction against the irrigation treatment among American surgeons. This method has been loudly praised and extensively practised in America, and the commencing change of opinion is of interest.

From year to year, and 1903 is no exception, reports appear of parasitic bodies observed by various workers at the etiology of syphilis. There is, however, one striking feature which characterises these discoveries; no one author corroborates the work of his predecessors. Each has a fresh organism, the recognition of which leads apparently to the discovery of the true and only germ of syphilis. It may be that in one of these organisms we have the cause of this widespread and terrible scourge; but on the other hand we may still be as far off as ever from the truth. A certain degree of scepticism naturally meets the advent of each new organism, and this will only be dispelled by the agreement of several independent observers. Visceral

syphilis, in its pathological, clinical, and therapeutic aspects, is commanding more careful and thorough attention, and papers will be found treating on this subject in a later page.

The Justus test for syphilis, which at one time raised the hope that obscure cases of diagnosis might be readily cleared up, appears from more extended observation to be unreliable. Baroche draws attention to a mercurial reaction of the oral mucous membrane in syphilitics, which he believes has some diagnostic value.

The important question of syphilis and Life Assurance is discussed in several papers. The open-air treatment of syphilis is suggested and very ably advocated by Dr. Douty, and a short resumé of his paper will be found under the appropriate heading.—[J. W. T. W.]

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DERMATOLOGY.—Except for advances in the application of electricity in various forms, there have been no very marked developments in the dermatological world this year. Every now and then some new synthetic preparation is introduced with a great flourish of trumpets, but few ever succeed in retaining an established place; the glowing accounts of some new and absolutely safe antiseptic which herald their introduction, are soon followed by cold criticisms, usually pointing out first that they are inefficient, and secondly that they are by no means free from danger. But with regard to electricity, the field seem to be ever widening, and what with X-rays, Finsen light, high-frequency currents, and static electricity, the consulting-room of the dermatologist now suggests the workshop of a mechanic of inventive disposition. Absurd claims are, it is true, made by the rash and inexperienced; but even the most conservative are being constrained to admit that there are some things which electricity can do better than anything else.—[N. W.]

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GENERAL SURGERY.—Several papers on actinomycosis have appeared during the year, and it is further emphasised that the cure of this condition depends on its locality; thoracic and abdominal actinomycosis always give a very high mortality. Von Baracz has used injection of nitrate of silver with good results, and this method is worthy of further trial.

The use of gelatin injections in the treatment of aneurysms

has given rise to tetanus in several further cases, and care should be taken that the solutions are properly sterilised. A new method of treating peripheral aneurysms by incision and arteriorraphy has been used by Matas of New Orleans.

The employment of suture in wounds of arteries is extending, and there seems to be a bright future before end-to-end anastomosis of arteries. Ferguson of Chicago has reported a very good case of gunshot wound of the popliteal artery, which was treated in this manner, and in which the arterial lumen was found patent some time later. New methods for sterilising sutures are constantly being suggested, but most surgeons will agree with Watson Cheyne, who says it is not the methods that are faulty, but that the sutures become infected after sterilisation. Barker draws attention to the use of linen thread for sutures; it has been successfully used as a skin suture, and also in stomach and intestinal work.

Several papers on the operative treatment of fractures have appeared during the year, but operation except in selected cases is to be avoided, unless one can be absolutely certain of avoiding sepsis; that the greatest care must be taken in this respect is well shown by the reiterated and strict directions which are given by Mr. Arbuthnot Lane.

The results in cases of suturing of heart wounds depend in the main on the presence or absence of sepsis, if the patient has not been placed beyond hope of recovery by the shock or by the hæmorrhage which occurs; out of 19 cases where recovery might be anticipated, 13 recovered and 6 died, all of sepsis, and in 4 of the 13 who recovered there was also septic infection.

The results of surgery for abscess and gangrene of the lung show a great improvement, which may be attributed to earlier diagnosis. In cases of foreign bodies in the bronchi, where attempts at removal through a tracheotomy opening have failed, if surgical interference be considered necessary, the anterior route seems to be much the more easy. A case reported and the difficulties encountered in an unsuccessful attempt by way of the posterior mediastinum, is likely to prevent most surgeons choosing this route in preference.

The presence of infected glands in the supra-clavicular fossa in cases of mammary cancer, would appear to destroy any hope of cure. Küttner has found that even in favourable cases removal of these glands when infected has not prevented recurrence in any single case, and it is hopeless to expect cure

under these conditions. Oöphorectomy or Beatson's operation undoubtedly leads to amelioration in some cases of mammary cancer, but so far there is no evidence of a cure. The concurrent exhibition of thyroid gland does not appear to be necessary. Our impression is that mammary tuberculosis is more frequent than is generally stated, and that probably some cases of supposed cures of cancer may have been cases of tubercle; it will be seen in the summary that diagnosis of cancer has been often made in these cases. Radical cure of œsophageal cancer seems to be as doubtful as ever. Tuffier thinks any good results are very problematical, and suggests a transpleural route in place of the posterior mediastinal route; two cases operated on by Demoulin by the latter route succumbed.

Wyeth's method of treating vascular neoplasms by the injection of very hot water may be useful.

Attention has been drawn to tumours and indurations of the corpus cavernosum; no treatment so far appears able to remove them.

One of the most useful publications which has appeared during the year, is the cancer of the tongue issue of *The Practitioner*, which should be placed in the hands of every student and practitioner. Attention cannot be too strongly drawn to the fact that the presence of enlarged glands ought not to be a factor in the diagnosis, and that in any doubtful ulcer or sore of the tongue which does not speedily yield to treatment, it is better to remove the tongue than leave an epithelioma to grow until glands are felt. It is time the teaching in the text-books on this subject was brought up to date. In any case of cancer the glands should be removed, even if they are not enlarged.

In surgical tuberculosis there is a praiseworthy tendency to look more to the constitutional and sanatorium treatment than was formerly the case, and excisions of tuberculous joints are not so frequently done as was the case some years ago.—[P. L.]

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OBSTETRICS AND GYNÆCOLOGY.—In the department of obstetrics most subjects have reached a certain degree of finality, the points capable of further elucidation and improvement being mainly points of detail. There is, however, one subject of which the very principle is still obscure, and that is eclampsia. The most important recent contribution on the subject is undoubtedly that of Nicholson, on the part played by thyroid

metabolism. It is possible that this may throw a great deal of light on the etiology, and therefore on the treatment of this grave complication.

Among papers on complications of labour we may call attention especially to two useful contributions; the one by Dorman on placenta prævia, the other by Ross on accidental hæmorrhage. The dilator recently invented by Bossi is favourably reported on by various obstetricians, as facilitating rapid delivery and as assisting in the dilatation of a rigid os. Pritchard advocates the use of the hand instead of the forceps in correcting occipito-posterior presentations. Taylor describes a causal factor not hitherto properly recognised as predisposing to recurrent abortion, namely, the strumous diathesis. He draws a useful and suggestive antithesis between this and syphilis in regard to the characteristics of repeated abortions due respectively to the one and the other cause.

In the department of gynæcology there is nothing very striking to record. We may, however, call attention to the useful discussion on genital tuberculosis at the International Congress of Gynæcology at Rome. We are as yet very far from finality in the treatment of uterine displacements; radical, *i.e.*, operative treatment continues to gain favour, and discussion now centres rather on the question as to the best methods of operative treatment, than on the question whether operative or palliative measures are the best. Women themselves prove to be the final arbiters in this as in other questions; they decide to have done with the constant disagreeable manipulations and the failures of pessary treatment, and conservative opposition wanes accordingly. The same factor is observable in the treatment of myomata; while the schools wrangle as to their innocence or dangers, the sufferers apply to such operators as offer them the best chance of safe relief from their encumbrances.

A good deal of interesting and valuable work is still being done in the pathology of deciduoma malignum. We call attention with special commendation to the important contribution of Teacher in the *British Journal of Obstetrics and Gynæcology*.—[A. E. G.]

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URINARY SURGERY.—The literature of urinary surgery for 1903 has proved exceptionally voluminous. This is partly accounted for by the extreme interest aroused by Edebohls in operating

on all forms of chronic Bright's disease by decapsulation of the kidney. The success which he reports as attending his innovation, even to the extent of "*cure*," has caused many workers to record their experiences on the subject ; space does not permit, however, to do more than to give a digest (*see under* "Kidney") of his own latest article on the subject.

It is interesting to note how, in successive papers, Edebohls speaks more and more cautiously of the dangers of interference, and in his last article he adds this very pregnant sentence : "I consider that the operation ought to be undertaken only by surgeons more or less familiar by practical experience with renal surgery in general." There is no question but that operative interference for the cure of chronic Bright's disease is a subject which the general practitioner must weigh carefully, for the innovation has much to recommend it.

The operative treatment of ascending pyelo-nephritis is more important ; it is also more universally accepted. It is eminently practicable and life-preserving.

Great advances have been made in the exact estimation of the functional capacity of the kidney, and a somewhat full *precis* has been given of various methods, by which it is hoped that urinary surgery in the future will be robbed of its greatest danger.

The impulse given two years ago by Mr. Freyer to the radical cure of the enlarged prostate, is responsible for a very large amount of corroborative literature, but a review of it will at once demonstrate that operative interference is not a panacea for all forms of enlarged prostate : that the cases have to be carefully selected, that the very large elastic prostates are the easiest and most favourable for removal, and that the small, tough, hard prostates must be dealt with by methods other than excochleation. Finally, there is a great difference of opinion as to which route is the better for attacking the gland. Thus, Freyer publishes 57 cases with 5 deaths by the suprapubic route, Albarran 35 with one death by the perineal route. There is no doubt that when the operation of removing the glandular contents from the prostatic capsule is firmly established, subsidiary details of the route to be adopted will fall into line, and the route to be adopted in any particular case will be determined by unprejudiced and extended clinical experience.—[E. H. F.]

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RECTAL SURGERY.—The past year has produced many contributions to the literature of surgery of the rectum, without disclosing any new method of treatment likely to substantiate its claim to a permanent place among operative methods of combating diseases of this portion of the body. A year ago we referred to the energy with which electro-therapeutics were being adapted to rectal ailments, doubting then whether they would prove better than mild palliatives. Already, if we may judge by the written opinions of the year just past, electrical treatment—particularly of hæmorrhoids—is proving itself unsatisfactory. On the other hand, we have, in the use of adrenalin in this department of surgery, a valuable adjunct to our collection of palliative measures.

The most striking novel departure described within the past year is the use of paraffin in the treatment of prolapse of the rectum. So far we are without the after-histories of cases so treated, and so long as that is so, we can only suspect that the formation of rigid boundaries for what should be a particularly elastic organ—*viz.*, for the lower part of the rectum and anus—can only be a proceeding fraught in itself with serious disadvantages, however successfully it may appear to combat the trouble against which it is directed.

It will be seen from some of the accounts quoted in subsequent pages, that there is no want of enterprise in the operations performed for the cure of malignant disease of the rectum. The final issue, however, of cases that appear to justify these heroic operations has rarely been at all a happy one; and at present, as heretofore, our only hope appears to be very early recognition of the disease, and free removal, as by a modified Kraske's operation, while this is still possible, without any such ghastly measures as simultaneous removal also of prostate and seminal vesicles.—[H. W. A.]

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DISEASES OF THE EAR.—There is still a good deal to be done before the localisation of ear disease can be quickly and accurately carried out. The continuous tone series of Bezold affords the means for such accurate localisation, but it takes a long time to complete a single examination. There is also required a better system than exists at present for the statement of the results of the application of hearing tests.

Progress in the treatment of suppuration within the temporal

bone continues to be made. The position is becoming gradually established that such suppuration must be treated to a finish, and that should non-operative treatment thoroughly carried out over a prolonged time fail to arrest the disease, operation should be resorted to. Generally speaking, removal of granulation masses, removal of ossicles, etc., fail to arrest the suppuration, although in individual cases these minor operations are indicated and sometimes succeed. But conservatism in the surgery of the temporal bone is still carried too far, and less risk is incurred and better results are got by the radical mastoid operation than by the practice of these minor operations, either alone or associated with cleansing of the middle ear.

Amongst the individual causes of suppuration within the temporal bone, tuberculosis has received, during the past year, greater attention than any other. The symptoms, especially the objective symptoms, of this disease present a pretty striking clinical picture, but the need for the bacteriological examination of such cases is great, and the evidence thus got should be put alongside the clinical evidence as often as possible. It becomes increasingly evident that tuberculosis of the middle ear is generally secondary to tuberculosis elsewhere, and the fact that post-nasal adenoids are so often tuberculous suggests to the practitioner the great need for the early recognition and thorough removal of these growths from the post-nasal space in all children in whom they exist.

During the past year the first meeting in Great Britain on an official footing took place, of teachers of the deaf and otologists. There is no doubt that although deaf-mutism is hardly ever curable, much good can be done by co-operation in the interest of the deaf of these two classes of workers. Three years ago a similar meeting was held in Germany, and it is to be hoped that such meetings will become common in both countries. The multiplication of special journals is perhaps not desirable in this connection, but there is no reason why teachers should not write occasionally in the otological papers, and otologists in the teaching organs.—[J. K. L.]

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EYE DISEASES.—Our knowledge of the part played by *bacteria* in diseases of the eye is as yet young. In the case of ophthalmia neonatorum, we know that the gonococcus is usually, though by no means always, the agent of infection. The same may

be said of the relation of the diphtheria bacillus to membranous conjunctivitis, and of the Koch-Weeks bacillus to acute mucopurulent conjunctivitis. The relation of the pneumococcus and of the Morax-Axenfeld bacillus to diseases of the cornea or conjunctiva, is as yet not so certain. The way in which each of these micro-organisms acts is by producing a special toxin, and some important experimental work on these or similar toxins has lately been undertaken by Randolph. He finds that on instilling these toxins freely into the conjunctival sac of rabbits, they produce practically no effect ; but if they are injected either into the conjunctival tissue or into the anterior chamber, their effect is very marked, and varies according to the species of bacterium furnishing the toxin. This suggests that the maintenance of the epithelium healthy and intact is of the greatest importance in protecting against, not only micro-organisms themselves, but the products of their activity.

It has for some time been known that exposure to *excessive light*, e.g., an electric arc light, may be followed by acute conjunctivitis. An observation of Grimsdale's (see "Conjunctivitis") makes it probable that this effect is due to the ultra-violet rays. A more serious effect of *excessive heat* has been established by Robinson, who under the name "Bottle-finisher's Cataract" (see "Cataract") describes a form of post-polar cataract to which those whose work involves exposure to intense heat, and who omit to wear coloured glasses, are liable.

For the complete diagnosis of *corneal ulcers*, the description of a rare, chronic form, known as "Mooren's ulcer," by Nettleship, will be found essential. For the discovery of the cause of recurrent attacks of pain after slight corneal abrasions apparently healed, a note of Menzies on "*Detachment of the corneal epithelium*" is important.

In the department of treatment, a new application of the X-rays has been found in the cure of trachoma. The utility of Haab's giant magnet in extracting particles of steel from the vitreous has received further testimony. As to new drugs, those which may now be considered to have gained a sure position will be found mentioned in the article on special therapeutics of the eye.—[A. H. T.]

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DENTAL SURGERY.—Miller publishes researches tending to show the slight action that saliva has in aiding or minimising the tendency to immunity to dental caries.

Arbuthnot Lane has extended the practice of venous resection followed in mastoid pyæmia cases, to the veins of the neck in a case of pyæmia of dental origin.

Jacquet maintains that alopecia is often of dento-reflex origin.

Kenneth Goadby has published the most complete and systematic treatise on bacteria of the mouth yet produced—*"Mycology of the Mouth."*—[J. G. T.]

DICTIONARY OF TREATMENT.

ABDOMINAL INJURIES.

A. W. Mayo Robson, F.R.C.S.

The older writers upon surgery were accustomed to refer to shock as the chief symptom of injury of the abdominal viscera, and taught that even slight injuries of the solid or hollow organs of the abdomen were invariably associated with a severe degree of shock. Since surgeons have adopted the plan of early exploratory operation in abdominal traumatism, it has been found that this view is often erroneous, and that gunshot, stab, or other limited wounds of the liver, spleen, pancreas, stomach, intestine, etc., unless accompanied by severe hæmorrhage or extensive extravasation, often give rise to no more than slight and transitory shock, and that the rupture and even severe laceration of these organs may occasionally occur with no more shock than would be expected from the superficial contusion. I have actually known of a case in which a youth was knocked down at football and ruptured the large intestine; yet after a few minutes he got up and joined again in the game. The same night I opened the abdomen and found the colon torn across.

Crile, in his masterly essay¹ entitled "An Experimental Research into Surgical Shock," has shown that certain organs and tissues of the body, when injured, seem to give rise to a far greater degree of shock than others, and in experiments upon the abdominal viscera found that injuries involving the diaphragm, especially that part attached to the pericardium, gave rise to a relatively greater degree of shock than similar injuries elsewhere; that injuries involving the pylorus, duodenum, and upper segment of the small intestine produced more reaction than injuries of the lower portion of the alimentary canal and the solid viscera; that severe traumatism of the female pelvic organs frequently occurred with practically

no evidences of shock; while injuries of the external genitals, especially in the male, produced often a degree of shock seemingly wholly out of proportion to the degree of the injuring force. In general, the more specialized and abundant the nerve supply to a part, the more will it contribute to the production of shock when subjected to injury. The occurrence of hæmorrhage in connection with visceral injury, if extensive, will give rise to an accentuation of the initial shock, and if continuous, will produce progressive weakness, pallor, weak pulse, thirst, restlessness, cold perspiration, air hunger, syncope, and death.

These symptoms, and also those of peritonitis, are valuable when present, but are often absent in the first few hours following the injury, at a time when the diagnosis should, if possible, be made, and any operative procedure for the relief of the condition should be undertaken. From the observation of some 20 cases of visceral injury following abdominal contusions, verified by operation or autopsy, Dr. Brewer² finds that of the symptoms present in the earliest stages of an abdominal injury, pain, tenderness, and muscular rigidity are the most prominent, and are most to be relied upon to establish the diagnosis. The association of all three symptoms is almost pathognomonic of peritoneal irritation. Of the three symptoms, however, *muscular rigidity* is the most reliable, and is sometimes the only sign present. In the absence of other diseased conditions, spasm of one or more of the abdominal muscles following a traumatism may be looked upon as nature's effort to protect an injured organ from further irritation.

Vomiting is a symptom occasionally present in abdominal injuries. It is not, however, as formerly taught, always the accompaniment of a severe visceral injury. It is commonly present in injuries involving the stomach and upper part of the intestinal tube, and in others accompanied by severe shock.

The occurrence of free fluid in the peritoneal cavity, evidenced by the presence of flatness in the flanks which disappears when the patient is turned to the opposite side, is a valuable sign when it can be demonstrated. The presence of a large amount of fluid fæces in the colon may (rarely) give rise to the same signs and lead to error. Free gas in the peritoneal cavity is also a valuable indication of rupture of the alimentary canal. In the absence of meteorism, this would be indicated by abnormal tympanites and an obliteration of the liver dulness.

Regarding the possibility of a more specialized diagnosis,

it is the writer's experience that in these severe injuries the signs and symptoms are rarely so localized and characteristic as to warrant a positive diagnosis of the exact nature of the lesion. It occasionally happens, however, that the signs point strongly to the injury of one or the other of the viscera. If, following an abdominal contusion with or without evidences of superficial injury, there are localized pain and rigidity over the epigastrium with the presence of free gas in the peritoneal cavity, a rupture of the *stomach* may be suspected. If, under the same circumstances, there is pain and tenderness limited to the right hypochondriac region and rigidity of the upper half of the right rectus muscle, with free fluid in the peritoneal cavity, and with progressive weakness, pallor, cold perspiration, restlessness, air hunger, thirst, and a rapid, weak pulse, rupture of the *liver* with severe hæmorrhage is to be inferred. The same symptoms and signs limited to the left hypochondrium suggest a rupture of the *spleen*. Pain and rigidity about the umbilicus or in the lower part of the abdomen, without other symptoms, suggest rupture of the *intestine*. The diagnosis is rendered more probable if, in addition, free gas can be demonstrated in the peritoneal cavity. Pain in the hypogastrium, with vesical tenesmus and the passage of a small amount of bloody urine or an empty *bladder*, indicates rupture of that organ, while pain in one flank, with hæmaturia and the formation of a retroperitoneal exudate, suggests contusion or rupture of the *kidney*.

Schmitt³ finds that a mortality of 97·5 per cent has followed the expectant treatment of cases of abdominal contusion with symptoms sufficiently severe to suggest possible perforation of the intestine. Kirstein's 18 cases operated on between 1897 and 1899, resulted in a mortality of 55·5 per cent. In four of the latter's cases laparotomy was done within five hours after the receipt of the injury; all these recovered, and his statistics bear out the fact that every hour that goes by after the receipt of the injury lessens the prospect of cure by operation. The reported mortality of cases operated on in the first twenty-four hours is 45 per cent; after the first twenty-four hours 66·6 per cent. These figures, compared with the 97·5 per cent mortality of the expectant plan, speak for themselves, and make a strong plea for very early interference.

REFERENCES.—¹*Ann. Surg.*, Feb., 1903; ²*Ibid.*; ³*Müncb. Med. Woch.*, July 19, 1898.

ABDOMINAL SURGERY. (*See also* "Abdominal Injuries," "Actinomycosis Abdominalis," "Appendicitis," "Ascites," "Duodenum," "Gall Bladder," "Hernia," "Intestines," "Liver," "Meckel's Diverticulum," "Omentum," "Pancreas," "Parotitis," "Peritonitis," "Spleen," "Stomach.")

A. W. Mayo Robson, F.R.C.S.

Position of Patient in sub-diaphragmatic Operations.—I have been accustomed for some years to use a sand-bag under the back in operating in this region, as it not only brings the back of the abdomen nearer to the surface, but also acts like the Trendelenburg position in pelvic surgery*. I have usually found this sufficient for all purposes, but Kelling,¹ while deprecating resection of the ribs, says it is possible to expose the region of the diaphragm by placing the patient in an attitude in which the head and thorax are fixed to the table in the horizontal plane; the trunk is bent in the region of the loin to nearly a right angle, and the pelvis and lower limbs descend vertically to the ground. The upper part of the trunk must be fixed to the table by straps. To obtain better access to the subphrenic region, the median incision in the linea alba should be supplemented by an extensive horizontal incision at the level of the apex of the twelfth rib. To keep the viscera in the abdomen, a towel is placed over them, usually below the stomach. Its margins are fixed with clamp forceps, and the central part is pressed down on the viscera by the hand of an assistant. The other hand of the assistant pulls the ribs upward. When working in the subphrenic space, it may be an advantage to divide the suspensory ligament of the liver.

Marwedel² has designed an operation which it is held does not cause so much mutilation as those devised by Lannelongue and Von Mikulicz. It consists in a long, curved skin incision, carried about 2 inches below the inferior margin of the thorax from the apex of the ensiform process to a line corresponding to the anterior end of the tenth rib. After exposure of the lower ribs and their costal cartilages, the cartilage of the seventh rib is divided near the sternum, and the cartilages of the eighth and two following ribs are also cut through close to their costal attachments. The flap thus formed, together with the musculo-cutaneous flap, is next turned upwards and outwards, and after division of the peritoneum, the hypochondriac region

* See *Diseases of Gall-bladder and Bile Ducts*, Mayo Robson, 3rd edition.

on the side of the operation is very fully exposed. There is some risk of wounding the pleura, but this may be avoided by the exercise of caution. This operation permits on the right side free access to the anterior surface of the right lobe of the liver, and also, after division of the suspensory ligaments, to the whole of the superior and posterior parts of this organ. The author reports a case in which by performing a similar operation on the left side he was able to expose freely the cardiac end of the stomach and the lower part of a stenosed œsophagus.

Quiescent Period in Acute Abdominal Affections.—Mr. A. H. Tubby, in a paper on this subject before the Medical Society of London,³ defined this period as one which was met with after an acute onset, when most of the symptoms had subsided, and the patient expressed himself as free from pain, and often said he was comfortable; but it was a prelude to aggravation of the disease, with acute peritonitis and a fatal termination unless its significance was realized. The quiescent period was well marked in cases of injury to the intestines with or without rupture, intestinal perforation by ulceration, injury to the peritoneal connections of the viscera with interference of their blood supply, acute lesions of the Fallopian tubes, and particularly in acute appendicitis, either ulcerative, perforating, or gangrenous. Cases were quoted, but it was noticed that the remission of symptoms was never quite complete, or the usual course of events differed by the persistence of one or other symptom. The cause of the quiescence of symptoms was then briefly alluded to. It was shown by a short summary of some of the most important signs, when conclusions could be drawn from the presence of any one of them in an apparently quiescent case. The importance of the altered proportional rate of pulse to temperature, of rigidity, of distension, of vomiting, were dwelt upon, and particular emphasis was laid on the blood count and the presence of leucocytosis. *Leucocytosis was present* in all these cases of latent mischief, and **Blood Counts** in a suspicious case should not be omitted. It was of the utmost importance in determining the onset of acute peritonitis, and afforded justifiable grounds for surgical interference without delay.

Sensibility of Peritoneum.—Professor Lennander has made a series of observations on this subject in patients operated on under local anæsthesia, with the result of confirming previous observations, that the parietal peritoneum is very sensitive to all operative procedures; but that the intestinal canal,

anterior border of the liver, gall bladder, great omentum and serosa of the urinary bladder, and the parenchyma of the kidney, are entirely non-sensitive for all operative procedures. While handling the intestine produced no pain, any dragging on the mesentery produced pain referred to the umbilical region.

Lennander's view of **McBurney's Point** is also interesting. He says that he considers it to be the point where the lymph vessels of the appendix go over into the parietal peritoneum in the posterior portion of the abdominal cavity, and that the pain is produced by a local lymphangitis and lymphadenitis at this point. The subserosa at this point on the posterior abdominal wall with its innumerable nerves becomes inflamed.⁴

Filigree for strengthening an Abdominal Wound.—Some surgeons advocate the wearing of a specially-fitted belt for six months or a year after the operation, while others trust to their own particular method of suturing as a safe-guard against any untoward consequences. Dr. William Bartlett,⁵ of St. Louis, recommends the plan of embedding in the wound a wire network or filigree, shaped something like the old fashioned drawing-out hat-rack. It is very easily constructed, being made by bending the wire round nails driven into a board, its form can be altered to suit the requirements of the wound, and, by suturing it to the tissues with fine wire, but by no means necessarily sewing it firmly round, it will efficiently prevent the occurrence of a ventral hernia. It is not essential that the edges of the muscles and fasciæ should be accurately adapted, as if the filigree be properly implanted between layers of healthy tissue, a good, sound scar will be formed. The results of this innovation have been uniformly successful in six cases out of seven in which it has been practised, and one patient has been under observation for two years. The prevention of stretching of the scar under increased intra-abdominal tension, the readiness with which it can be sterilised, and its ease of introduction, would appear to show that this simple wire contrivance will fulfil all that has been hoped for it in the domain of abdominal surgery.

Normal Saline Solution during and after Abdominal Section.—For some years I have been in the habit of giving large **Saline Enemata** as a routine after abdominal operations, as a means of combating shock and lessening thirst, and I believe that I was a pioneer in advocating large intra-venous infusion of saline fluid as a means of treatment for shock.⁶ It can be given

during or immediately after operation to the extent of several pints.

Humiston⁷ advocates the regular employment of **Saline Fluid** during operations. The technique is simple. After partially closing the wound, he pours into the cavity through a glass funnel not less than two quarts of normal saline solution at a temperature of 112° F., and quickly ties the few remaining sutures previously introduced. Usually the patients have little or no thirst for the first eighteen hours, have less pain, and require no enemata of any kind, and are thus kept absolutely at rest and free from the annoyance of too much nursing. In vaginal coeliotomies where this method cannot be employed, he begins to have the saline administered subcutaneously, the trocar entering at the junction of the anterior axillary border at a line on a level with the upper border of the right breast, the trocar being plunged downward, backward, and inward, so that the fluid finds the loose tissue in the axilla, and backward underneath the scapula, rather than under the breast. In this position, with a very little massage, three or four quarts can readily be injected with four feet of pressure. In emergency work outside of hospitals, where assistance is limited, and sterile salt solution is not to be had, he has used a hastily prepared non-sterile salt solution during an operation, by allowing the sigmoid and colon to be slowly filled with the fluid. This is easily accomplished when the patient is in the Trendelenburg posture and the peritoneal cavity opened to permit of the ready guidance of the tube above the pelvic brim. Large quantities may be used in this way without hindrance in the field of operation, and the rapidity of absorption can only be appreciated by actual observation.

Another use of the salt solution which he has made of late has certain theoretic, and proved practical grounds for its adoption. For a number of years he has not flushed the cavity nor used a drain. He does, however, occasionally employ the Mikulicz tampon to control general oozing; and in these cases has found that the filling of the peritoneal cavity after the tampon has been replaced, tends towards the dissolution of clots and carrying off of effete material within the pelvis.

Adhesions after Abdominal Operations.—This subject is one of such importance to the surgeon that any exact record of clinical study or experimental work merits attention. Vogel⁸ made a number of experiments on animals, and studied five cases in the

human subject, of which four died owing to recurring adhesions causing obstruction. He gives the following as causes:—

(1.) Hæmorrhage from intra-peritoneal wounds, in so far as the injury hinders absorption, causes clotting, and by means of the clots occasions broader adhesions than could arise from the injury *per se*.

(2.) Mechanical irritation and injury.

(3.) Sloughs which are insufficient to hinder primary union.

(4.) Chemical irritants insufficient to hinder union.

(5.) Foreign bodies.

(6.) Infection.

(7.) Quietude of the intestine markedly favours the formation of adhesions.

Vogel recommends aseptic instead of antiseptic technique; the avoidance of unnecessary injury to the peritoneum (especially such as is caused by the use of sharp hooks), avoidance of the cautery, and careful suturing (wire being better than silk). He says Müller's method of using normal saline solution, and the employment of gold-beater's skin, are not effectual in preventing adhesions reforming after operation, but that **Gum Arabic** solution acted well (gum Arabic, 1; normal salt solution, 2, filtered and sterilised). It was applied as follows: After almost complete closure of the wound, a drainage tube was passed into the abdomen, through this the solution was injected, the tube removed, and the suture completed. To regulate peristalsis, subcutaneous injections of **Atropine**, and still better of **Salicylate of Physostigmine** were used. In one case after appendicectomy the latter drug was used in 0·0004 doses, from two to four times daily with good effect.

R. T. Morris⁹ speaks well of Cargile's method of applying a thin variety of gold-beater's skin from the peritoneum of the ox, over roughened peritoneal surfaces. In rabbits experimented on, the results were satisfactory.

REFERENCES.—¹*Centr. j. Chir.*, Oct. 19, 1901; ²*Ibid*, No. 35, 1903; ³*Brit. Med. Jour.*, May 3, 1902; ⁴*Ann. Surg.*, Nov. 1902; ⁵*Ibid*; ⁶*Clin. Soc. Trans.*, 1893; ⁷*Amer. Jour. of Obst.*, Oct., 1902; ⁸*Dent. Zeits. f. Chir.*, Bd. 63, p. 296; ⁹*Med. Rec.*, May 3, 1902.

ABORTION, Habitual. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Taylor¹ takes exception, we think very properly, to the term "habitual" abortion, on the ground that it represents a theory, no longer generally held, that the uterus acquires a "habit" of expelling its contents at a given period of pregnancy. He

suggests "recurrent abortion" as a preferable term. In considering the *causation* of recurrent abortion, he of course recognises syphilis as an important and frequent cause. Other causes which occur only infrequently are intra-peritoneal adhesions (as in cases of previous appendicitis), chronic renal disease, and deep laceration of the cervix: and he reminds us that occasionally repeated abortion may be due to repeated criminal interference. He specially calls attention, however, to a definite group of cases of very nearly equal importance to that belonging to syphilis, and the most distinguishing features which bind these cases together are:

(1.) Indications of a low vitality on the part of the mother or father, or both parents.

(2.) A "strumous" family history.

(3.) The remarkable result of an essentially "anti-strumous" treatment, when carried on for a long period of time or throughout the whole of the pregnancy.

The treatment adopted in 12 cases was the administration of **Syrupus Ferri Phosphatis Co.** $\bar{5}j$ t.d.s., and gradually increasing doses of **Cod Liver Oil**, $\bar{5}j$ to $\bar{3}$ ss t.d.s., during the whole time they were under his care. The results were very satisfactory, as nine of the 12 cases had either borne living children or were near the end of a healthy pregnancy at the time of writing; the other three discontinued attendance.

Taylor contrasts the type of recurrent abortion due to syphilis with that of the strumous class. In the syphilitic class the natural tendency (even apart from treatment) is rather of an upward character, and finally living children may be expected. In the "strumous" class the natural tendency is rather of a "downward" character: unless something is done to improve the general health, each abortion tends to further weaken the patient, to occur at an earlier period, and finally in some untreated cases the power of conception is lost. However, although this is the "type," the course of the pregnancies is by no means a constant one: anything which improves the health and nutrition may to a very large extent modify the "downward" tendency.

Then in syphilis, while abortion may occur spontaneously and without difficulty, as in some cases of general infection of the mother and foetus, in quite a large proportion of cases there is some definite difficulty connected with the abortion. The placenta is often found adherent to the uterine wall, is only fully detached after careful curetting, and the operation

may have to be repeated over and over again with each succeeding abortion. In the "strumous" class such a history is unknown.

Finally, the general character of the aborted product is different in the two classes. In syphilitic cases, whenever there is disease of the placenta, this is larger, thicker, more fleshy, patchy, and paler than normal. It often bears evidence, too, of adhesion and of tearing. In the "strumous" class it is difficult to say that there is anything very definitely characteristic in the earlier miscarriages, the ovum is often apoplectic, and there is a hæmorrhagic mole with little or no trace of a fœtus, but these differ but little—at all events macroscopically—from other abortions which are the result of accidental bleeding. In later abortions the child is often dead, but there does not appear to be any distinguishing feature characterizing either fœtus or placenta.

Jardine² recommends the administration of **Chlorate of Potash** in 10 grain doses, thrice daily, from about the end of the third month onwards until delivery. He reports three cases where patients who had had a succession of miscarriages went to full term under this treatment. Ross³ reports a case similarly treated, with equally good results.

REFERENCES.—¹*Brit. Med. Jour.*, April 11, 1903; ²*Med. Press*, Oct. 1, 1902; ³*Montreal Med. Jour.*, Feb., 1903.

ACCESSORY SINUSES OF THE NOSE.

H. Lambert Lack, M.D., F.R.C.S.

Antrum Suppuration.—Sturmann¹ states that neither the character of the secretion nor the duration of the disease can be considered a determining factor in the treatment of antrum suppuration, as some cases with a fœtid purulent or with a non-fœtid mucous secretion, with healthy or diseased teeth, and with considerable disease of the nasal mucous membrane, can be cured by simple **Irrigations**; whilst other cases, apparently more favourable, demand a large **Opening of the Antrum**. While irrigation should be practised first in every case, if no progress is made in from four to six weeks, operative procedures must be considered. In operating on the antrum, as much of the mucous membrane as possible must be retained, as the poorest results are obtained when it is entirely scraped out. The opening in the antrum must be large, and drainage secured by tampons, and later by an obturator. Irrigation should be accomplished with indifferent solutions, as asepsis of the antrum is impossible.

Tilley² states that in chronic suppuration of the antrum the

choice of treatment will generally lie between the **Alveolar Method** of drainage and some form of radical operation. As a rule the patient should be given the chance of cure by the simpler method. The radical operation is somewhat severe, and necessitates at least ten days' confinement to the house. For several days after its performance the cheek may be swollen and painful, and a cure cannot always be depended on. He reserves the operation for those who cannot tolerate the small inconvenience of syringing daily, those in whom the alveolar method has not effected a cure, and those who are going abroad and require to be cured as quickly as possible. He is inclined to prefer Kuster's operation, which consists in simply making a large opening into the antrum through the canine fossa, to the Caldwell-Spicer method.

Lermoyez² recommends conservative treatment in the first place. If the case be of dental origin the teeth must be removed. Syringing through the natural orifice is unreliable, and he prefers **Puncture** through the inferior meatus of the nose. By this means, of thirty really chronic cases he succeeded in curing thirteen. As a rule three to twelve syringings are necessary. By the method of **Alveolar Puncture** he succeeded in curing 17 out of 40, but nevertheless he considers this method is slow and uncertain, and prefers the radical operation if the case do not yield to irrigation through the inferior meatus. In 46 cases treated by the radical method, the Caldwell-Luc operation, 40 were cured. The average time required was five weeks.

Frontal Sinus.—Claus³ has made some experiments on 117 cadavers, as the result of which he comes to the conclusion that **Trans-illumination** of this sinus is untrustworthy as a means of diagnosis. The most frequent cause of failure to illuminate the sinus was the thickness and vascularity of the bony wall. Even large sinuses could not be illuminated when the walls were thick. On the other hand in several cases, when pus was present, the trans-illumination was successful, since it happened that in these cases the walls were thin. Serous or sero-sanguineous effusion did not prevent the passage of the light. The author naturally places little reliance on the value of trans-illumination of the frontal sinus as an aid to diagnosis.

J. H. Philip⁴ comments on the fact that the frontal sinus is sometimes lacking, thereby producing a risk of wounding of the dura mater in operative work. He suggests the use of the **X-rays** to determine the existence and outlines of the sinus previous to operative intervention. He records the clinical

history of a case in which this procedure was followed, and he found that the limits of the cavity were very clearly defined.

Lambert Lack⁵ discusses treatment through the nose by means of **Antiseptic Irrigation**. He thinks this method should be reserved for those cases in which the patient is very averse to an external operation, in which irrigation of the sinus is easy, and in which no urgent symptoms are present. He does not, however, favour this line of treatment. With regard to the performance of the external operation, he considers that the decision should be left to the patient, unless there are any urgent symptoms present, such as severe pain, deficient drainage, bulging of the cavity, cerebral symptoms, or general ill-health. The external operation is next discussed, and after viewing the various methods of drainage that have been practiced, and citing a number of fatal cases, he concludes by making a plea for obliteration of the sinus, as generally the best means of effecting a cure. Even when the sinus is large, the disfigurement is not nearly so great as might be anticipated.

Toeplitz⁶ points out the danger of attempts to reach the frontal sinus through the nose. In one of his cases, which was complicated by suppuration in the ethmoidal sinuses, an orbital abscess followed four days later. An external operation was performed, and the abscess opened in the eyelid with success. The operator thinks that he did not reach the frontal sinus at all in his first operation, showing how imperfect such a method of treatment is.

Lermoyez⁷ considers that the method of Ogston-Luc has sometimes had admirable results, but it cannot be denied that it is attended by considerable risks. Of 17 cases, nine healed by first intention and eight relapsed. Of these eight, five were subsequently treated by Kuhnt's method, one by repetition of Luc's method, and two died. He states that Kuhnt's method absolutely guarantees the patient against any relapse, but considers that it may be advantageously combined with the operation of Luc, and frontal-nasal drainage employed instead of external drainage.

With regard to the intra-nasal treatment, Tilley⁸ states that no instance of cure has ever come under his notice, but in many cases relief of symptoms has been obtained. For the radical operation on the frontal sinus he recommends the free opening of the sinus and any recesses which exist, the removal by curetting of the entire mucous lining, together with nasal and external drainage. If the sinus be a small one, **Obliteration** is

a more certain method of cure. He states that the chief danger of these operations arises from septic infection of the frontal bones, which can be prevented by an efficient method of drainage.

Luc⁹ reports two cases of meningitis following operation on the frontal sinus, in one of which death occurred twenty-eight hours later, and in the other on the seventh day. There was no evidence of pus retention in either case, and Luc believed that infection took place at the time of the operation. To disinfect the wound when operating on similar cases, he now uses **Hot Oxygenated Water**, and cauterizes with a strong solution of **Zinc Chloride**.

It may be added that these reports show that operations on the frontal sinus have a very heavy mortality, which but for the candour of Luc and a few others would be greatly underestimated.

Ethmoidal Sinus Suppuration.—Lack¹⁰ condemns all minor operations under cocaine anæsthesia for the treatment of this condition, except in cases of the most limited disease; as a curative measure in extensive disease they are both inadequate and dangerous. He prefers in all cases of extensive disease the method of **Curettement** of the ethmoidal cells which he has described for extensive or recurring cases of nasal polypus. In his hands the method had proved not only curative but free from danger. When an abscess or sinus in the orbit existed in connection with ethmoidal disease, or when cerebral symptoms were present, he thought an external operation should be performed. The incision is made along and just below the supra-orbital margin and downwards along the inner wall of the orbit, to just below the internal canthus. Through this incision the inner wall of the orbit and the ethmoidal cells can be freely reached, and the cells cut or scraped away.

Sphenoidal Sinuses.—Hinkel¹¹ considers pain radiating from the frontal region to the nape of the neck, especially if associated with pain in the eyeball, suspicious of involvement of this sinus. In seven out of twenty cases polypus was present. In six cases the sphenoidal disease was associated with empyema of other sinuses, usually the ethmoid cells. Two cases presented malignant tumours, which are apparently more frequently associated with disease of the sphenoidal sinus than with disease of the other cavities. From an analysis of his cases he concludes that there are no diagnostic symptoms of sphenoidal empyema. The pain above referred to, with a scanty purulent, at times offensive

discharge, mainly into the pharynx, should awaken the suspicion of sphenoidal disease.

Irrigation of the sphenoidal sinus through the natural opening has not been satisfactory. Severe headache has occasionally followed the treatment, and the author has never succeeded in relieving the symptoms or controlling the empyema. Additional drainage and free access to the sinus must be secured by an artificial opening through the anterior wall, the middle turbinate in part or whole having first been amputated. The natural opening of the sinus is enlarged by breaking down the anterior wall with some modification of the sharp spoon, as first suggested by Schäfer. The chief difficulty after this operation has been the tendency of the opening to close again to such a degree that the discharges are easily blocked in. The possibility of penetrating the cranial cavity, with injury to its contents, must be fully appreciated. Nevertheless, recorded deaths directly or possibly due to operative interference, are much fewer than the deaths from meningitis due to untreated sphenoidal abscess.

Another danger of this operation is serious immediate or secondary hæmorrhage. In close relation to the external wall of the sinus lie the internal carotid artery and the cavernous sinus, and the spheno-palatine branch of the internal maxillary artery runs just to the outer side of the anterior wall of the sinus, and sends a twig across the face of the sphenoid towards the septum. This vessel is especially liable to be injured.

The author states that the results of his operations have been satisfactory, in that the more distressing symptoms have been relieved, but a large number of cases which he has reported as cured continue to have a more or less annoying mucous or mucopurulent discharge into the naso-pharynx.

Goris¹² states that the sphenoidal sinus requires operation in three conditions, viz., optic perineuritis; retrobulbar abscess violent and continuous occipital pain, due to retention of pus in the sinus. He operates with the patient deeply under chloroform, and removes the middle turbinal with Doyen's forceps guided by the finger passed well up into the post-nasal space. The sphenoidal sinus is then opened by breaking through its anterior wall with a blunt-pointed rugine, after which the rest of the wall is resected with Grünwald's punch forceps. The sinus is then curetted and packed with gauze for forty-eight hours.

Lack¹³ considers it best to bring the natural opening of the

sinus into view by removing the posterior half or more of the middle turbinate. Then the sinus should be irrigated with a mild antiseptic solution. Should discharge continue in spite of this, the sinus should be freely opened. The natural ostium should be enlarged by breaking down the thin anterior wall of the sinus with a Hajek's hook, and then the anterior and if necessary the inferior wall resected with Grünwald's forceps. This operation done under cocaine anæsthesia and direct illumination was free from danger. In a few cases he had opened the sinus when curetting the posterior ethmoidal region for polypi. In this case the curette had been guided by the finger under general anæsthesia.

Myles¹⁴ reports a case of sphenoidal sinus suppuration, in which there was a necrotic area and perforation in the anterior wall. The sinus was opened with trephine and curette. Eight days after there was an alarming hæmorrhage, which recurred three days later, the patient losing one and a half pints of blood in three minutes. The wound was packed, but the bleeding recurred again in two days, requiring ligature of the external carotid artery. The patient apparently recovered in the end.

MacDonald¹⁵ related a case where operation on the posterior end of the turbinals to secure irrigation was followed by orbital aneurysm, which was subsequently cured by ligature of both carotids. He also stated that he had obtained good results by irrigating the nose by Michel's method, viz., by allowing the patient's head to hang backwards well over the end of the couch, and pouring (not syringing) a small quantity of 5 per cent **Boro-Glyceride Solution** into the nostrils.

Onodi¹⁶ (Buda-Pest), referring to Jansen's operation of opening the sphenoidal sinus through the maxillary antrum, stated that he had examined twenty-five skulls, and found that the operation was anatomically possible in only three. The ordinary nasal route was the only safe way to the sphenoidal sinus.

REFERENCES.—¹*Berlin klin. Woch.* July 21, 1902; ²*Jour. of Laryng.* Nov. 1902; ³*Arch. f. Laryng.* Bd. xiii, Hft. 1; ⁴*Jour. Amer. Med. Assoc.* March 22, 1902; ⁵*Edin. Med. Jour.* June, 1902; ⁶*New York Med. Jour.* Sept. 6, 1902; ⁷*Jour. Laryng.* Nov. 1902; ⁸*Ibid*; ⁹*Ibid*, Dec. 1902; ¹⁰*Ibid*, Nov. 1902; ¹¹*Laryngoscope*; ¹²*Jour. Laryng.* July, 1903; ¹³*Ibid*, Nov. 1902; ¹⁴*Laryngoscope*, April, 1903; ¹⁵*Jour. Laryng.* Nov. 1902; ¹⁶*Ibid*.

ACHOLIA. (See also "Fæces.")

Robt. Hutchison, M.D.

This affection, which has hitherto received but scanty attention from pathologists and clinicians, is discussed by Cheadle.¹ In a

minor degree it is not uncommon. In its more extreme and rarer forms it is a serious disorder, and occasionally is fatal. Acholia is characterised by the absence of bile from the stools; without jaundice or sign of obstruction to the biliary outflow. It has been observed by clinicians under varying circumstances, and in different disorders, without, in most cases, any special appreciation of its significance. One form of it in children was described by Dr. S. J. Gee,² in 1888, under the name of coeliac disease, in allusion to the flaccid distended abdomen and implication of the abdominal organs. He regards it as a form of chronic indigestion. Similar cases were recorded by Dr. R. A. Gibbons,³ eleven years later. He thought that the source of trouble was in the liver. Similar conditions of the stools in adults have been noted by Sir Joseph Fayrer in the so-called white diarrhoea of the tropics, and by Dr. P. Manson and Dr. G. Thin in sprue. A condition of colourless stools has also been described by Dr. T. J. Walker⁴ in two cases of complete obstruction of the pancreatic duct, in one case persisting uninterruptedly for upwards of twenty years.

Acholia varies in degree. In some cases the fæces are of a merely pale fawn colour, or straw colour, in others clay-coloured, like putty; but in extreme and typical cases they are absolutely white, without a vestige of colour, except a slight tint of grey—as white as pipeclay or white paint. Acholia occurs not infrequently in persons who live highly—in those of gouty habit. Now and again they pass light-coloured whitish stools for a few days, accompanied by *malaise*, disgust for food, a general feeling of illness, and often a yellowness of complexion not usually amounting to actual jaundice. After a cholagogue purgative and restricted diet the motions become normal. A similar condition may arise from time to time in chronic Bright's disease. In this country, however, acholia usually occurs in children under the age of five, most often under the age of two. It must be borne in mind that young children fed entirely or chiefly on milk have naturally light motions, but these have always a distinct yellow or brownish tint, and are thus distinguished from those of true acholia. In the latter the fæces are slightly loose, like oatmeal gruel or milk gruel; but sometimes they are like a mass of white paste or white paint. There are other special features: viz., they are distinctly greasy in appearance, glistening, fatty, offensive, and voluminous, as if food was imperfectly absorbed.

The onset of acholia in children is usually abrupt; colouring

matter suddenly disappears from the feces, which quickly assume the characters described. In other cases the change is more gradual; the stools, which at first are merely pale, becoming less and less coloured until all pigment disappears.

Acholia is speedily followed by marked impairment of general health. At first there may be some rise of temperature, especially if dentition is troublesome, but after a time the temperature falls to normal or subnormal, the appetite fails, and the child becomes pallid, languid, and enfeebled. It ceases to thrive, becomes flabby, and loses weight, the abdomen becomes full yet flaccid, the enfeebled wall yielding to the gases of the fermenting food, and in prolonged cases the patient wastes steadily to emaciation.

In acholia no definite lesion appears to have been discovered after death. The liver is of normal appearance. The absence of bile and the failure in the digestion of fats point to a more or less complete arrest of the bile-forming function of the liver, as in sprue. Its cause is obscure, but it may perhaps, as Gibbons has suggested, be of nervous origin. Sometimes, however, it appears to be due to chill.

TREATMENT.—The indications for treatment are to ease the work of the liver, especially regarding the digestion of fats and starches, and to assist its function. To this end fats and starches, and especially fats, should only be given in the raw state in small quantity, chiefly pre-digested, as in **Pancreatized Milk** gruel or pancreatic emulsion. For the rest, broth, beef tea, fish or meat foods, skim milk, malted bread or biscuit, with the addition of fresh fruit or baked apple for the older children. As for drugs, **Bismuth** and **Opium** if the looseness is troublesome, and those medicines which act as **Hepatic Stimulants** and blood stimulants are also useful, together with antiseptics, such as **Salol** and **Listerine**. The **Chlorides of Arsenic** and **Iron**, with **Perchloride of Mercury** in small doses, have appeared to do good. **Brandy** in doses of from 10 to 60 drops, according to age, given in a dessertspoonful or tablespoonful of sugar and water, is a useful hepatic stimulant, and if the teeth are pushing and the gums are swollen and painful they should be lanced. Appropriate doses of **Chloral** and **Bromide**—for a young infant from half a grain to a grain of chloral and from 3 to 5 grains of bromide of ammonium—are of value as serving to allay reflex nervous irritation.

REFERENCES.—¹*Lancet*, May 30, 1903; ²*Bart. Hosp. Rep.* 1888; ³*Edin. Med. Jour.* Oct. and Nov. 1899; ⁴*Trans. Royal Med and Chir. Soc.* 1899.

ACNE VULGARIS.*Norman Walker, M.D.*

Gilchrist¹ gives the record of biopsies in 86 patients; histological sections showing changes deep into the corium beyond even the hypertrophied hair follicle. Smears, obtained by expression of the contents of the follicles, revealed the acne bacillus in all the cases, but cultures were obtained in only 50 per cent. Testing this bacillus with sera from affected patients, he found clumping reactions, but his results are not convincing, especially as the agglutination was more apparent with weaker dilutions. He suggests that the anæmia and general malnutrition, which is so common an accompaniment of acne, may really be due to a toxæmia set up by the bacillus.

TREATMENT.—Jourdanet² gives an account of the methods adopted at Uriage, where the waters contain sulphur. There the **Hot Sulphur Spray** is mostly used to the face, and the individual lesions are treated by expression.

G. H. Fox³ finds vigorous **Curetting** of the face produces best results, and follows this with massage and friction, laying great stress on forcible pinching of the face by the fingers and thumb.

Purdon⁴ gets good results with an ointment of 10 grains of **Iodide of Cadmium** to an ounce of vaseline. His method is to order this to be rubbed well in at night, and washed off next morning with hot water and a superfatted soap, accompanied by **Massage** of all the affected skin. Shoemaker⁵ emphasizes the importance of attending to the condition of the intestinal canal by giving **Mercurials**, etc.

REFERENCES.—¹*Jour. of Cut. Dis.* New York, March, 1903; ²*Gaz. des Eaux; Treatment*, July, 1902; ³*Amer. Jour. Cut. Dis.* March, 1903; ⁴*Dublin Jour. of Med. Sci.* Sept. 1903; ⁵*Med. Bull.; New York Med. Jour.* Dec. 20, 1902.

ACROMEGALY.*Robt. Hutchison, M.D.*

This has for some years been well recognized as a clinical entity, and since its first description as such by Marie, in 1886, a very considerable number of cases have been recorded. The evidence must be regarded as overwhelming in favour of its relation to changes in the pituitary body. Of late years it has been shown that cases of the disease vary in duration as well as in acuteness, and in the preponderance of certain of the clinical manifestations. The conditions found in the pituitary body after death are not always identical, and many observers have pointed out the interesting analogies in that respect which this malady bears to Addison's disease. Recently cases of acromegaly

have been reported, in which the signs and symptoms of exophthalmic goitre have been present. In other cases the acromegalic symptoms have been markedly relieved by the administration of **Thyroid** preparation. Another interesting observation shows an undoubted relation between acromegaly and gigantism. So far the result of the treatment of the disease with **Pituitary Extracts** has been disappointing, but there are reasons to hope that the last word in this connection has not yet been spoken.

Acromegaly and Gigantism.—Gibson¹ in an address with the above title, states that the one constant factor in the pathology of acromegaly is an enlargement of the pituitary body. In 48 cases examined *post-mortem*, there was a pituitary change in 44. He mentions that there were on record two cases in which alterations in the size and structure of the pituitary gland had been seen, while no symptoms of acromegaly had been present during life. He refers to Cunningham's view that the condition of gigantism depends, like acromegaly, upon a change in the pituitary body, and states his entire agreement with the suggestion that gigantism only differed from acromegaly in respect of the age at which it began. Apparently when the pituitary change occurred in early life, before the union of the shafts of the long bones and their epiphyses, gigantism was the result; whereas when the pituitary change only began, as was commonly the case in acromegaly, at the age of twenty-five or twenty-six, acromegaly resulted. He drew an analogy between this interesting fact and the well-known observation that in cases of cretinism the use of thyroid extract only produced growth when the patient was sufficiently young to have the epiphyses still ununited. He expresses the opinion that by the employment of **Thyroid Substance** in early cases of acromegaly an arrest of the further progress of the disease may be secured, while improvement under the same treatment has actually occurred.

Carlo Mastori² in reporting a case of acromegaly in a woman of thirty-seven, observed that in his case the thyroid gland treatment did not cause any perceptible diminution in size, but the patient stated that the head pain lessened, and that she was no longer troubled with somnolence. He holds that the pituitary gland in some way regulates the function of the thyroid, so that if it be affected the influence of the lesion will extend to the thyroid, and result in conditions such as he described.

Cattle³ records a case of *acromegaly with symptoms of exophthalmic goitre*. The signs of Graves' disease were well marked,

and most of the evidences associated with acromegaly were present. He draws attention to a possible relationship between the two diseases, each of which is at present usually ascribed to faulty condition of a ductless gland. He remarks that the pituitary body contains iodothyryn, a substance also contained in the thyroid, and that the pituitary body has been found enlarged in myxœdema and cretinism. He draws attention to the fact that the sexual glands also are often atrophied or functionless in acromegaly, while the thymus may be of large size.

Mitchell Stevens⁴ has observed and reports very fully a case of *acute acromegaly from sarcoma of the pituitary body*. His case was clinically a typical one in a woman aged twenty, with symptoms of three years' duration. The evidences of acromegaly were characteristic. Headache and defective vision were very marked. The *post-mortem* examination showed a large cerebral sarcoma, 2 inches by $1\frac{3}{4}$, occupying the sella turcica, and no trace of the pituitary body remained. The author maintains that in the acute cases of acromegaly, that is, those lasting from three to four years, in these only and in these always, there has been found a sarcoma of the pituitary body. Such acute cases must of necessity be fatal, as there is a malignant intracranial tumour. Two classes of symptoms are present in these cases: viz., those of an intracranial tumour, and those properly termed "acromegalic." The first class are directly due to the enlargement of the pituitary body, and depend upon the amount of pressure exercised by the growth; and the second class of symptoms are peculiar and striking, are present to a greater or less extent, and are probably due to loss of function of the pituitary body. He discusses the pathology of acromegaly, and considers the balance of evidence in favour of the conclusion that disease of the pituitary body with consequent loss of its function is the cause of acromegaly, and that it, like the thyroid gland, has some "secretory" function influencing metabolism. He acknowledges that the administration of **Pituitary Extracts** in the disease has generally proved disappointing, but argues that this want of success does not prove that acromegaly is not due to loss of some "secretion" of the pituitary gland necessary to the economy. Even in the case of the thyroid, we must remember that, though the thyroid extracts are so beneficial in myxœdema in man, they do not prevent symptoms of that disease in a monkey after thyroidectomy, though thyroid grafts are beneficial; moreover, the really active principles of

the pituitary gland may be destroyed in the manufacture of the pituitary extracts. Even if it were possible to cure, relieve, or prevent the further progress of symptoms due to the loss of function of the pituitary gland, the problem of dealing with the intracranial tumour would still remain.

He considers the relation of acromegaly and gigantism must be regarded as definite. It is an interesting fact that about 20 per cent of acromegalians are giants, and also that about 14 per cent of cases of acromegaly commence under twenty years of age. It is also important to observe that when there is congenital absence of the thyroid, cretinism with dwarfing is present. These facts suggest that loss of pituitary function leads to overgrowth with late union of the epiphyses, and that loss of thyroid function has the opposite effect.

Kerry⁵ describes a case of chronic acromegaly in a man of fifty who came under observation for failing vision. The eye changes were marked, and the usual evidences of the disease appear to have been undoubted, though osseous changes were less marked than is often the case. The administration of **Thyroid** was followed by marked improvement. He surveys the present pathology of the disease, and while admitting the evidence of its relation to the pituitary body, does not consider the causal relation by any means a simple one. He quotes various observations attributing to the hypophysis a marked influence on oxidation, and compares its function and that of the thyroid gland. He regards preparations made from the pituitary body as likely to prove of great value.

REFERENCES.—¹Opening address to Norwich Med.-Chir. Soc. in *Brit. Med. Jour.* Nov. 8, 1902; ²*Rivist. Crit. di Clin. Med.* May 24, 1902, in *Med. Rec.* July 5, 1902; ³*Brit. Med. Jour.* April 4, 1903; ⁴*Ibid.* April 4, 1903; ⁵*Montreal Med. Jour.* May, 1903.

ACTINOMYCOSIS.

Priestley Leech, M.D., F.R.C.S.

Professor von Baracz,¹ of Lemberg, read a report on 60 cases of this disease before the Chicago Surgical Society. It is very frequent in Galicia, due to the extensive farming in that country. In 52 cases the jaw and neck were affected, in 3 the tongue, in 2 the abdomen, and in 3 the thorax and lung. He has also seen three more abdominal cases in the practice of his colleagues. The site of entrance of the fungus, the *streptothrix actinomycotica*, is the mucous membrane of the mouth, of the air passages, or of the digestive tract; very rarely does it enter through the skin. The teeth are never the portal of entrance; the transmittents of

the disease are exclusively minute vegetable bodies, such as the awns of barley, and grass particles. The evidence of teeth not being a portal of entrance for the fungus is found in the lack of decayed teeth in actinomycotic cattle, and sometimes in human subjects, the impossibility of finding the fungus in decayed teeth, and its frequent presence in the soft parts of the cheek. Decayed teeth, however, play an important rôle in the etiology of the disease, as the softened and swollen gums allow of an easy entrance of the fungus with a foreign body. The fungus rarely develops in the mucous membranes of the mouth; it wanders towards the surface of the body, and develops either in the region of the angle of the lower jaw, or lower in the neck. Bones are never primarily attacked in actinomycosis of the jaw, either in man or animals; the central bone-forms of Poncet do not exist. Tumour-like forms do occur in the lower jaw and neck, but rarely.

As regards TREATMENT, in the first 40 cases it consisted of **Curettement** and extraction of teeth. As a hard wall was generally produced around the diseased area, and as this prevented extension of the disease, Baracz attempted to artificially produce such a wall. He injected irritants like **Nitrate of Silver** (20 per cent solution) and **Tincture of Iodine**, and he cured his last 9 cases without operation. Tongue actinomycosis occurs in the form of circumscribed or diffuse abscesses, which were cured by opening and curettement.

The prognosis in actinomycosis of the thorax and lungs is very unfavourable; three of his cases died; the fungus enters by the air passages or œsophagus. These cases are not suitable for surgical interference, because the deep foci in the lungs and pre-vertebral region cannot be reached; the reported cases of cure after operation must be accepted with great reserve, because of the short time for observation after the operation. Baracz thinks the only way of dealing with such cases is by so-called **Blood Antisepsis**, the method first introduced by Bacelli for the cure of syphilis, and later advised by Credé in cases of septic pyæmia, viz., the intravenous injection of **Colloid Silver** (collargol). **Silver Nitrate** is of great value in the treatment of actinomycosis. He tried experiments in animals on the intravenous injection of the various soluble preparations of silver, and he used 2 per cent solutions of argonin, argentamin, largin, ichthargan, and soluble colloid silver (collargol) in increasing doses; the **Collargol** proved the best. He thinks intravenous injection of collargol will be of great service in actinomycosis of the thorax and lungs.

In abdominal actinomycosis the fungus enters with vegetable bodies through the mucous membrane of the alimentary canal, and these latter usually lodge in the region of the cæcum or vermiform appendix. In these cases the prognosis is good if the disease is limited; if, however, the pre-vertebral tissue, the liver, or the portal vein become involved the prognosis is bad, as metastases easily occur; if mixed infection supervenes a septic pyæmia results.

He says there is only one form of fungus, and cultures for a positive diagnosis of actinomycosis are unnecessary, often impossible, and thus many cases would be unrecognized if cultures were depended on. The clubs are not always present, but the mycelium threads and small bodies like micrococci are always present. He agrees with Boström that animal inoculation is not successful in actinomycosis.

In the discussion which followed, large doses of **Iodide of Potassium** for some days, and then an intermission for three weeks, were recommended. Ochsner had had good results in one case with the **X-rays**.

Erving² reports six cases which had been in the Johns Hopkins' Hospital, and gives a *resumé* of some hundred cases reported in American literature. He recommends **Wide Incision** of the affected tissues, and internal administration of **Potassium Iodide**.

Rowland³ reports three cases occurring in London, one of disease in the thorax, and two in the abdomen; the likeness to tuberculous disease was very marked in two of the cases.

Heinzelmann⁴ gives the final results of the treatment of actinomycosis in v. Bruns' clinic in Tübingen. Since 1885 they have treated 56 patients with actinomycosis, 45 males and 11 females: the greatest number of cases occurred between the ages of twenty and fifty; there was only one child affected, which supports Frey's remark that childhood is almost immune to actinomycosis. The majority of cases were in country people. In 30 cases the face and neck were affected; 35 were cured and 3 were not cured. The treatment was wide **Excision** and moist tamponing of the wound, preferably with perchloride solution and iodoform. Actinomycosis of the upper jaw gives a much worse prognosis than that of the lower jaw. Three cases of thoracic disease were seen, of whom two died. There were 11 cases of abdominal actinomycosis. In two cases the origin of the disease seemed to be in the stomach, and it had thence spread to the diaphragm and pleura and thoracic wall. Out of the 11 cases 3 died in

hospital; death occurred in 4 cases from actinomycosis, a longer or shorter time after they left the hospital, and only 3 were really cured. There was one case of actinomycosis of the finger in a servant who had wounded her middle finger with a splinter of wood when cleaning a floor; the diseased part was excised, and in a cavity in the middle was found a splinter of wood which was infiltrated with actinomycosis fungus.

His opinion is that the prognosis is dependent upon the accessibility, in a surgical sense, of the lesion, and this accounts for 89.7 per cent of cures in actinomycosis of the jaw and neck, and only 27.2 per cent of cures in the abdominal cases.

REFERENCES.—¹*Ann. Surg.* March, 1903; ²*Johns Hopkins' Hosp. Bull.* Nov. 1902; ³*Lancet*, Sept. 6, 1902; ⁴*Beiträge z. klin. Chir.* xxxix Bd. 2 Hft.

ACTINOMYCOSIS ABDOMINALIS. *A. W. Mayo Robson, F.R.C.S.*

Vander Veer and Elting¹ have compiled a useful summary of the subject of actinomycosis, with a report of a case of the abdominal form of the disease, illustrated by instructive photographs. In over 50 per cent of cases of abdominal actinomycosis the primary focus is in the cæcum, appendix, or adjacent part of the ileum and colon; in from 10 to 15 per cent it is in the rectum; in the small intestine such a focus is rare, and in the stomach very rare. The authors' patient was a carpenter, aged forty-five. He had suffered for a few months from crampy pains in the abdomen, and then a small abscess developed in the umbilicus, and on examination, masses could be felt through the abdominal wall. Sarcoma of the mesentery was suspected, and the appearances observed when a small incision was made suggested malignant disease. The lower end of the incision was drained with iodoform gauze. The umbilical abscess burst a few days later, and Elting detected the actinomyces in the pus. The patient before and after the operation had irregular septic fever; the temperature sometimes rose to 104°. He was put on strong doses of **Potassium Iodide**. At the end of two months his condition had improved, but abscesses had opened in the abdominal wall, and there were four fistulous openings in association with a firm infiltration of the parietes, which had existed at the date of operation. Six weeks later the infiltration had spread, more fistulous openings developed, and actinomycetic granules were detected in the discharge. The iodide was administered all the time. A small abscess had developed near the inner canthus of the right eye; one had been noticed

in the same situation before the operation. The patient's general condition greatly improved, and he gained 40 lbs. within six months; at the end of seven months he had gained 16 lbs. more. The abscess near the eye had healed. The sinuses had not all closed, but the discharge was slight and contained only an occasional actinomycetic granule, mostly in an early stage of development. The indurations in the abdominal wall and cavity had greatly lessened in area. The patient, still taking potassium iodide, was now in good general health, and had been doing light work for several weeks.

An interesting case is also reported by Mr. Whipple, Dr. Webber and Dr. Fox,² in which a patient of fourteen suffered from abdominal actinomycosis, which was treated by operation and by iodide of potassium with great benefit.

In *Diseases of the Gall-bladder and Bile Ducts*,³ will be found a reference to a case of my own which is I believe the only case of actinomycosis of the gall-bladder hitherto recorded. (Under "Appendicitis" will be found a reference to cases of actinomycosis of the vermiform appendix).

REFERENCES.—¹*Albany Med. Ann.*, Jan., 1902; ²*Brit. Med. Jour.*, Nov. 15, 1902; ³Bailliere, Tindall and Cox, 3rd edition.

ADENOIDS.

H. Lambert Lack, M.D., F.R.C.S.

M. Lapeyre¹ states that he has always been able to bring about the disappearance of even voluminous adenoids by the internal use of **Iodine**. He gives tincture of iodine in increasing doses, beginning with six drops twice daily for children from five to nine years of age, and increasing the dose rapidly to sixty drops. This high dose is usually well borne. Occasionally some gastric intolerance is noted, but never any serious accidents. The author, therefore, recommends medical treatment in preference to surgical intervention. In addition to this treatment, since nasal obstruction is a cause of anæmia in children, appropriate hæmatinics should be added where called for.

Porter Parkinson,² while recommending operative treatment for hard and fibrous adenoids, considers a different line of treatment should be adopted when a soft and gelatinous mass is felt. These cases may improve with ordinary care, but the obstruction to nasal respiration will often to some extent remain. In such cases he is in the habit of applying locally to the naso-pharynx an **Astringent Solution**, so as to hasten the disappearance of the growth and prevent any permanent thickening being left behind.

Urban Pritchard long ago suggested the injection of a solution of **Tannic Acid** through the anterior nares, but Parkinson prefers the direct application to the post-nasal space of a solution containing equal parts of **Liquor Ferri Perchloridi** and **Glycerin** by means of a brush with a curved handle. This may be done twice weekly at first, and continued once a week until all symptoms have abated. He supplements this by the use of the respiratory exercises recommended by Arbutnot Lane, and the internal administration of **Cod-liver Oil** and **Iron**. He further recommends this treatment in cases which have undergone operation, but in whom the symptoms have recurred.

These claims are undoubtedly to some extent supported by experience, but it should be remembered that adenoids tend to spontaneous disappearance, a fact apparently forgotten by these advocates of long courses of treatment. Tonics, change of air, especially to the seaside, breathing exercises, etc., are quite as good and useful remedies, and more pleasant. When time is pressing, or symptoms are urgent, operation by modern methods is undoubtedly advisable.

For the removal of adenoids, Furniss Potter³ recommends the administration of gas and ether, and operates with the head over the end of the table. He is greatly averse to the use of chloroform. On the other hand, Marsh⁴ greatly prefers chloroform in these operations. He operates with the head and shoulders slightly raised on a low pillow. He states that when the chloroform is given by an experienced anaesthetist and the operation performed by an experienced operator, the administration of chloroform is safe. It is the combination of inexperience that produces fatalities.

REFERENCES.—¹*Rev. Franc. de Méd.* 1903, *New York Med. Jour.* March 14, 1903; ²*Clin. Jour.* April 16, 1902; ³*Clin. Jour.* Dec. 24, 1902; ⁴*Lancet*, June 21, 1902.

ALCOHOLISM.

Purves Stewart, M.A., M.D.

The symptoms of chronic alcoholism as a disease *per se* are too familiar to require any elaborate description, but Crothers¹ emphasises the fact that the abuse of alcohol sometimes supervenes as a symptom in a previous disease. It is therefore of importance to enquire into the patient's health during the period which preceded the abuse of alcoholic drinks. In about thirty per cent of inebriates, it is found that signs of *general paralysis* of the insane were already present, and a large number of these cases are syphilitic. Many of the strange cases of persons

who after a life of consistent, temperate living, suddenly develop mental exaltation, become inebriates and die, are examples of general paralysis. Another common disease which may precede alcoholism is *dementia*. Persons who suddenly become alarmed at the prospect of disease and death, and who eagerly search for drugs and other means to lull their fears, frequently ending in inebriety, are cases of *dementia*. The next most common causes of inebriety are trauma or obscure head injuries, either in the form of blows on the head, foreign bodies pressing on the brain, concussion, sunstroke, mental or physical shock.

Influenza and neurasthenia, by their depressing influences, frequently lead to alcoholism, and some cases of early tuberculosis are marked by an impulsive craving for alcohol. Dyspepsia may lead to inebriety in patients who use drugs containing spirits (such as certain popular bitters), for the relief of their symptoms. Reflex influences, such as those exercised by tape-worms, have also been blamed as exciting causes of alcoholism, and a number of cases of carcinoma are associated with the drink craving.

The diseases which follow the abuse of alcohol are more easily recognised, and one need only mention chronic alcoholic dementia, general arterio-sclerosis, with its attendant risks of hæmorrhages, cerebral and otherwise, hepatic cirrhosis and chronic gastritis, peripheral neuritis, and renal cirrhosis, all of which are familiar to the physician.

As to TREATMENT of these various phases of alcoholic poisoning, the most accomplished alienists and physicians are unanimous in maintaining the necessity for total and immediate deprivation of alcohol. Certain cases, in which sudden withdrawal tends to cause dangerous collapse, require special care; but even in them we have other **Cardiac Stimulants**, notably **Strychnine**, on which to fall back, whereby the patient may be tided over the critical period.

REFERENCE.—¹*New York Med. Jour.*, Nov. 8, 1902;

ALOPECIA AREATA.

Norman Walker, M.D.

Heidingsfeld¹ in seven cases has obtained successful results by the application of **Trikresol**. His method is to first get rid of fat and oil by the use of **Xylol**, and then to apply his remedy with a cotton swab. The local irritation may be great, and he advises the use of **Ice** and **Cold Compresses** if necessary to allay the pain. [We have tried this, but cannot report a successful result.]

REFERENCE.—¹*Jour. Cut. and Gen.-Urin. Dis.* New York, Dec. 1902

ALOPECIA (of Dental Origin).*J. G. Turner, F.R.C.S.*

M. Jacquet¹ gives reasons for regarding alopecia from a neuro-pathic standpoint, postulating first some general lowering of tone as a predisposing condition, and next some definite local lesion as the precipitating cause. Of these immediate causes, among which are named painful orchitis, otitis, and pleurisy, M. Jacquet considers dental lesions as undoubtedly the most frequent. They act reflexly (the possibility of toxic action is not discussed), and dental lesions are specially picked out for the following reasons. At the outset M. Jacquet was struck with the great frequency of all sorts of dental disease in patients suffering from alopecia. Noting his cases carefully, he found alopecia frequently following *subjective* troubles in the trigeminal area. These troubles he notes as of three varieties: painless inflammatory swelling, painful inflammatory swelling, or more often simple neuralgia. The time elapsing between the painful crisis and the onset of alopecia varies from some days to three months.

This relationship in time is supported by a regional relationship; when the "crisis" can be precisely localised by the patient, the loss of hair is limited to the same side as the crisis, is symmetrical as it was, or is homolateral with it.

Examined objectively, the patient will present a number of vaso-motor phenomena—thermic, *fluxionaires*, trophic, and æsthetic—which accompany alopecia. Some are rare, as coryza or epistaxis, or rather hemi-coryza or hemi-epistaxis, limited to the nostril of the affected side. More frequent is submental or auricular erythematous redness, associated with a rise or sometimes a lowering of temperature. Sometimes there is indolent swelling of the cheek, and frequently the submaxillary glands are enlarged, with a unilateral sore throat. Most important of these phenomena are the *objective* troubles of sensation (pain, etc.) Even when there is little pain there may be nervous and muscular hyperæsthesia, coextensive with the alopecia, unilateral or bilateral according to its distribution. Both in time and in distribution these troubles are in accord with the alopecia.

Further, the relationship of the periods of dentition lends support to the theory. The second dentition (as viewed by M. Jacquet) consists of two parts; one part extending between the ages of five and fourteen years; the second, the period of the eruption of the third molar, extending between the twentieth and

thirtieth years. Statistics show that at these periods alopecia is most common ; while the *entr' acte dentaire*, from fourteen to nineteen years of age, corresponds with the *entr' acte peladique*. After thirty, alopecia is rare ; a fact equally true, in the main, of dental caries.*

Hence alopecia may be considered as a *reflex trophic disease* of which the immediate cause is often a gingivo-dental irritation. In support of this theory, M. Péchin publishes the results of twenty cases of alopecia of dental origin, treated in accordance with this presumption. Improvement began soon after the commencement of the treatment and was followed by progressive amelioration, ending in complete or almost complete cure in from one to four months.

REFERENCE.—¹ *Jour. de Méd. et de Chir.* Feb. 1903.

AMPUTATIONS.

Priestley Leech, M.D., F.R.C.S.

Clavicle, Excision of.—Dr. Beeckman Delatour¹ reports four cases of excision of the clavicle. Partial or complete excision of the clavicle is done for tumour, necrosis, compound fracture, and for exuberant callus. At first sight it would appear that the entire removal of the clavicle would render the arm of that side useless ; but it is not so, and all the four cases had very good movement. In three of the cases the clavicle was removed for sarcoma, and the other for exuberant callus at the site of a fracture. Of the sarcomata, one was free thirty-three months afterwards, one died free nine months later, and one was lost sight of. The most remarkable thing in these cases is the complete functional result obtained, and the short time it takes for it to develop. The operation is not as a rule difficult, but one must bear in mind the close anatomical relations of the clavicle to the vessels and nerves of the upper extremity, and at the sternal end the innominate artery on the right side and the thoracic duct on the left. He thinks it is much less difficult to begin by disarticulation of the bone at the acromial extremity, as the field is free and parts well exposed, while trying to liberate the sternal end. There have been reported only forty cases of complete excision, with a mortality of seven, or about 18 per cent. Of incomplete excision for various conditions there have been about 100, with a mortality of 14 per cent. Delatour had two cases of partial excision with one death. In the fatal case a portion of

* Dental caries is emphatically a disease of youth.

the clavicle was excised to facilitate ligation of the subclavian vessels in a case of aneurysm. In this case death was the result of acute anæmia.

Hip Joint.—Riedel² says much blood is lost in this operation, by Rose's method, from the intra-osseous vessels, and in order to avoid this he ligates the artery at the beginning of the operation, and postpones the ligating of the vein until the last stage. In this way the negative pressure existing in the thoracic cavity and large venous trunks is enabled to withdraw the blood from the intra-osseous vessels before the completion of the operation, so that after ligating and dividing the femoral vein only a few drops of blood are lost from its distal end.

Lower portion of the Leg.—Wilms suggests that in amputation of the leg at the lower end, the tendo achillis should be drawn over the divided ends of the bones, and sutured to the periosteum and connective tissue in front of the tibia. This interposes a soft cushion between the bones and skin. He did it in one case, and secured a painless functionally perfect stump.

Interscapulo-thoracic.—Dr. Le Conté³ reports a case of this operation for sarcoma of the humerus in a boy eighteen years of age. When the veins were exposed after removal of the clavicle, it was found impossible to ligate the third portion of the subclavian artery or the first part of the axillary, owing to the presence of the large veins, and the subclavian was ligated at the junction of the first and second portions. Owing to its depth, its close relation to the pleura, its partial covering by the vein, and the close proximity of the phrenic nerve, such a ligation will be always attended by an immediate danger to these important structures. Furthermore the short distance from the innominate, together with the large branches given off in its first portion, subjects the patient to the remote danger of a secondary hæmorrhage, an event which would almost of necessity mean death. The ligation of this portion of the subclavian was a distinct error of judgment. Two other procedures were open, either of which would have been safe. First, the veins could have been ligated, and after they had been severed the artery would have been readily exposed; this would have involved the loss of the blood that remained in the arm. Secondly, a still better process would have been to expose the axillary artery as high as possible, certainly its third portion and probably its second, and tie a temporary ligature round it. Then the arm could have been elevated, the veins ligated and severed, and a permanent ligature

placed around the third part of the subclavian and the artery severed in this portion.

Excision of Scapula.—Dr. Delaup⁴ describes a case of total excision of the scapula, with preservation of the upper extremity, the operation being done for necrosis of the bone. The patient, a boot-black, was able to follow his employment, and had a very useful arm. The conditions calling for this operation are chiefly three: (a) Traumatism, such as gunshot wounds; (b) Acute or chronic inflammatory lesions of the bone (osteo-myelitis, necrosis, tuberculous ostitis), and (c) Tumours (benign or malignant) which require total or partial resection of the bone. In these cases it may be a question of excision of the scapula or inter-scapulo-thoracic amputation; the latter operation, though the more serious one, is less frequently followed by recurrence; but if the disease is limited to the scapula, excision of this bone is the operation of selection.

The literature upon the subject has been gathered by Buchanan in a useful form. From his tables it does not appear that removal of the whole scapula is more dangerous than excision of a portion. He thinks that Langenbeck's advice to retain the coracoid process and the glenoid cavity, for better muscular movements, should not be followed in cases of malignant disease.

The prognosis as to the value of the arm in case of removal of all or part of the scapula may be almost positive, and to a high degree favourable.

Hopkins,⁶ of Philadelphia, reports a case of excision of the scapula in a boy eight years of age for progressive chronic interstitial myositis associated with obliterating endarteritis. It was supposed to be sarcomatous in nature until a microscopic examination proved the true nature of the growth. The functional result as regards the movements of the arm were excellent.

REFERENCES.—¹*Ann. Surg.* Jan. 1903; ²*Cent. f. Chir.* July 19, 1902; ³*Ann. Surg.* Oct. 1902; ⁴*Ibid.*; ⁵*Phil. Med. Jour.* vol. vi, 1900; ⁶*Ann. Surg.* June, 1903.

ANÆMIA.

T. N. Kelynack, M.D., M.R.C.P.

TREATMENT.—The numerous researches of recent years into matters dealing with hæmo-pathology, and the adoption of investigation of the blood as a routine part of clinical examination, have gone far to assist in directing and regulating the rational treatment of anæmic states. But since much of our so-called knowledge respecting the pathogeny of what we are pleased to term the primary anæmias still remains more or less

conjectural, treatment continues to be to a great extent symptomatic and empirical.

Undoubtedly, much may often be accomplished by a carrying out of strict hygienic measures, and much advantage frequently accrues from the adopting of **Open-Air Methods**, particularly when carried out in accordance with suitable **Sanatorium Treatment**, where not only is fresh air secured, but rest and exercise are carefully apportioned, dietetics rigorously controlled, hydrotherapeutics employed in suitable cases, and education secured in the conduct of a hygienic life. In some cases these conditions may be best carried out in health stations of high altitude.

In spite of the adverse criticism of T. R. Fraser¹, **Cacodylic Acid** and its compounds still find favour. Choutet² would locate the formation of cacodylic acid to the thyroid, which he regards as the source whence the body derives what Gautier would consider its normal supply of arsenic. Mendel³ claims success for intra-venous injections of sodium cacodylate. G. Lalli⁴ has advantageously employed **Ferri Cacodylas** conjointly with sodium cacodylate in chlorotic and anæmic conditions in children. **Methyl-disodic-Arseniate**, first introduced by A. Gautier⁵ under the name of methyl-arseniate-disodique, and largely prescribed by French practitioners under the name of **Arrhenal**, is still used as a substitute for the cacodylates, and many affirm is useful in anæmic states.

Ferric Nucleinate is said to be obtained from casein or from soft-roë of fish, and is claimed to be a form of iron most suitable for utilization in the building up of hæmoglobin. It is administered in doses of 0.5 grm. (gr. 8) per day.

Hæmol still retains a prominent position among organic iron preparations, and is well adapted for children. **Hæmogallol** finds favour as a good hæmatopoetic: metal and halogen hæmols have also been introduced. R. Kobert⁶ advocates the use of an **Extract of Malt and Hæmol**.

Malet⁷ employs **Peroxide of Hydrogen** internally for the treatment of anæmia and chlorosis.

O. Kronheim⁸ recommends a new ferruginous animal albumen, called **Perdynamin**, which is said to contain iron in the form of hæmoglobin completely combined with albumin: perdynamin is a liquid, and is either taken alone or mixed with other drinks, in quantities of one liqueur-glassful half an hour before meals.

Eubiose is another new ferruginous blood tonic, and is obtained

by the impregnation of a highly concentrated hæmoglobin solution with carbonic acid.

Many forms of meat juice and so-called extracts are often of service in the management of anæmic conditions, but should be selected with judgment and a discriminating discretion. **Puro**, which is the juice of lean beef boiled down in a vacuum pan to the density of syrup, is said to be a useful medium for alimentation per rectum, owing to its non-irritant properties and the rapidity with which it is absorbed.

Oxygen Inhalations are sometimes helpful in severe cases.

F. Tunncliffe⁹ advocates the use of **Phenolphthalein** as an aperient in chlorosis.

REFERENCES.—¹*Brit. Med. Jour.* No. 2151, p. 712, 1902; ²*Paris Thesis*, 1902; ³*Therap. Monats. Hft.* 4, S. 178, 1902; ⁴*Merck's Rep.* vol. xvi, May, 1903; ⁵*Rev. de Thérap. Méd. Chir.* No. 5, p. 149, 1902; ⁶*Merck's Rep.* vol. xvi, May, 1903; ⁷*Klin. Therap. Woch.* No. 51, S. 1720, 1902; ⁸*Deut. Med. Woch.* No. 27, S. 495, 1902; ⁹*Brit. Med. Jour.* No. 2181, p. 1224, 1902.

ANÆMIA, PERNICIOUS.

T. N. Kelynack, M.D., M.R.C.P.

The pathology of pernicious anæmia still continues to be shrouded in obscurity, and its treatment consequently remains uncertain. W. Hunter's views¹ regarding the pathogeny of the affection do not gain ground, and many objections have been raised to his claim that it is a "specific infective hæmolytic anæmia." In a further study² regarding the infective nature of pernicious anæmia, he seeks to prove the non-identity of Addison's anæmia and Biermer's anæmia, and to show that there are fundamental differences between Addison's and Biermer's conceptions of their etiology. N. Federoff³ holds that at least one form of pernicious anæmia is etiologically connected with invasion by the bothriocephalus. Bothriocephalic anæmia is particularly common in Finland and the countries around the Baltic, but is rare in Switzerland, where 10 per cent of the inhabitants are said to harbour the bothriocephalus. Many hold that the blood changes are caused by toxins formed by the parasite. Plaier on infecting rabbits with extracts made from the bothriocephalus did not find that any characteristic anæmia resulted, but Schauman and Talyviot obtained positive results in dogs but negative in rabbits. Jules Courmont and Andre⁴ record a case of pernicious anæmia apparently due to the bothriocephalus latus.

A. Scott Warthin⁵ in an elaborate and historical study of the pathology of pernicious anæmia, particularly with reference to

changes occurring in the hæmolymp nodes, and based on a pathological investigation of eight cases, concludes that pernicious anæmia is essentially a hæmolytic disease, but whether arising from auto-intoxication or infection, yet remains to be determined ; that the spleen, lymph and hæmolymp glands, and bone marrow present evidences of increased cellular hæmolysis ; that possibly from the destruction of hæmoglobin a vicious circle of hæmolysis may be established ; that the hæmolysis is not confined to the portal area, as held by W. Hunter, but in some cases, at least, takes place also to a large extent in the pre-vertebral lymph and hæmolymp nodes and bone marrow ; that in the majority of cases only slight reaction from iron is found at the sites of actual hæmolysis, and the change to hæmosiderin is for the greater part accomplished by the endothelium of the liver and kidneys ; that in most cases there is a cyclical or intermittent process of hæmolysis ; that the hæmolymp glands sometimes show increase in size and number, present dilatation of the blood sinuses, and evidences of increased hæmolysis, but the changes are not to be regarded as specific of pernicious anæmia, since they may be produced by other infections or toxic processes characterized by great hæmolysis, and that the lymphoid and megaloblastic changes in the bone marrow are to be regarded as of a compensatory nature, indicative of an increased activity of red cell formation to supply the deficiency caused by the excessive hæmolysis.

C. B. Gay⁶ records a fatal case in a female, aged 26, in which there was marked ptosis of the abdominal viscera.

Bret and Cade⁷ from a study of changes occurring in the liver in cases of pernicious anæmia, arrive at the conclusion that it is not reasonable to attribute to the liver any part in the genesis of the disease.

Of recent years, considerable attention has been given to a study of the derangements of the nervous system occurring in cases of pernicious anæmia. W. Osler⁸ in describing a case, points out that nervous features occur in a considerable percentage of all cases, and may be divided into three groups. (1) the cases in which there have been no symptoms of any nervous trouble during life, but in which well marked spinal cord changes are discovered *post-mortem* ; (2) a group in which there are spinal symptoms during life ; (3) a group in which the spinal cord symptoms initiated the trouble, and a pernicious anæmia occurs later. A number of cases are reported by Russell, Batten, and Collier. Osler also describes hemiplegia as a condition

exceptionally met with in pernicious anæmia, and records the case of a young man of twenty-three who in the course of the disease complained of weakness in the right arm, and on the following morning had a complete right-sided hemiplegia.

F. Billings⁹, in his study of the changes occurring in the spinal cord and medulla in pernicious anæmia, arrives at the following conclusions: (1) There is a well established relation of diffuse cord degeneration with pernicious anæmia; (2) It seems highly probable that the hæmolysis and the cord changes are due to the same toxin; (3) While the source of the toxin is unknown, the fact that gastro-intestinal disturbance is so common in the disease would lead one to suppose that it is of intestinal origin; (4) The diffuse degenerations of the spinal cord which occur in conditions without pernicious anæmia do not appear to differ essentially from those of pernicious anæmia; (5) It is possible that a common blood-circulating poison exists, which may expend its force upon the blood in one individual, upon the nervous apparatus in another, and coincidentally upon the blood and spinal cord in others.

G. L. Gulland,¹⁰ in an interesting study of pernicious anæmia in relation to the Christie will case, enumerates a number of chronic cases in which patients lived for very many years after the first onset of symptoms.

The TREATMENT of pernicious anæmia shows but little effectual advance. **Hygienic Measures** are being accorded a greater importance, but no drugs have succeeded in displacing **Arsenic** from general favour. P. Reckzeh¹¹ advocates alternating treatment by **Iron** and **Arsenic**. Byrom Bramwell¹² considers arsenic the best drug, much improvement, although probably never complete cure, often resulting. As to its manner of action, there is much difference of opinion, the following being suggested—stimulation of the bone-marrow, the production of more stable red corpuscles, diminution of the ferrogenic function of the liver, and antiseptic action on the stomach and intestines. Arsenic is certainly more efficacious in the first attack than in subsequent relapses. It should be given at first in small doses, and gradually increased; chronic arsenical poisoning has resulted from its long continued use in large doses. After improvement has occurred or a temporary cure has taken place, it should be continued.

Phosphorus has been given with success, according to some, but **Bone-marrow** seems generally to have proved of no real benefit. The use of **Intestinal Antiseptics** has been attended

with very uncertain and on the whole unsatisfactory results. Pyorrhœa alveolaris, so common in this and other conditions, should be treated. The injection of **Anti-streptococcus Serum** has been said to have proved efficacious. **Transfusion** of blood and saline solutions seem to be of no permanent value. **Inhalations of Oxygen** are useful as a palliative measure. The internal administration of **Perchloride of Mercury** has been advised. In every case **Rest** to the enfeebled, fatty, and dilated heart is essential.

REFERENCES.—¹*Med. Ann.* 1902 and 1903; ²*Lancet*, Jan. 31, Feb. 7, 1903; ³*Canad. Jour. Med. and Surg.* April, 1903; ⁴*Jour. de Phys. et de Path. Gén.* March 15, 1903; ⁵*Amer. Jour. Med. Sci.* Oct. 1902; ⁶*New York Med. Jour.* July 11, 1903; ⁷*Lyon Méd.* Oct. 5, 1902; ⁸*Johns Hopkins Hosp. Bull.* Oct. 1902; ⁹*Boston Med. and Surg. Jour.* Sept. 4, 1902; ¹⁰*Scot. Med. Surg. Jour.* Aug. 1903; ¹¹*Berl. klin. Woch.* July 28, 1902; ¹²*Clin. Studies*, Oct. 1902.

ANÆSTHESIA.

R. J. Probyn-Williams, M.D.

Chloroform.—Vernon Harcourt¹ communicated to the Society of Anæsthetists the results of his experiments in devising an apparatus for regulating the percentage of chloroform vapour delivered to a patient. As pointed out by Dudley Buxton in the second report of the Chloroform Committee of the British Medical Association,² the main principle of the dilution of the chloroform differs from that of Junker, in which the air is pumped through the liquid chloroform, and resembles the method of Hobday,³ who in 1897 constructed an apparatus in which air was either sucked or pumped over the surface of chloroform by means of a bellows, while in Harcourt's apparatus the air is drawn over the chloroform by the inspiration of the patient. The great advantage of this new apparatus lies in the fact that a definite proportion of chloroform vapour can be administered, and this proportion can be altered at will by the anæsthetist.

In the first form of Harcourt's apparatus, air is drawn through two boxes, the first half full of a mixture of chloroform and alcohol, the second containing water. The two boxes stand in a shallow tank, immersed in water kept at a constant temperature. From the first box the air takes up a mixture of the vapours of chloroform and alcohol, in the second box the alcohol vapour is dissolved in the water, while the chloroform passes on to the patient. By varying the proportion of chloroform to alcohol in the first box and the temperature of the mixture, the proportion of chloroform to air in the gas drawn through may be varied from a large percentage to a small fraction per cent.

This apparatus was tried with success at the Radcliffe infirmary, but Harcourt recognised that a more portable one was desirable, and designed a simpler form, in which the air is, as in the first, drawn over the surface of liquid chloroform, but in this case the dilution is obtained by admitting with this air from the chloroform bottle, as much air free from chloroform as may be necessary to obtain the required dilution. The essential part of the apparatus is a three-way stop-cock. One arm admits air which has been drawn through a small Woulf's bottle containing chloroform, 2 per cent of chloroform vapour being taken up. Through the second arm air alone is admitted, and by the movement of a handle as much pure air may be mixed with the stream from the first arm, containing 2 per cent of chloroform vapour, that the proportion may be reduced as low as 0.1 per cent, the exact strength being shown on the index. Through the third arm of the stop-cock the desired mixture is inspired by the patient, and by means of suitable valves expiration also takes place, the anæsthetic mixture being conveyed to the patient by a tube ending in an ordinary face-piece. An ingenious combination of glass bulbs, which rise or sink at known temperatures, enables the administrator to see when the chloroform in the bottle is becoming too much cooled, and if this is the case, the necessary warmth may be obtained by holding the bottle in one hand for a few seconds.

The inhaler has been tried with satisfactory results by Dudley Buxton and Tyrrell (see below), and if further experiments show that a higher proportion than 2 per cent is necessary for some cases, this may easily be obtained by increasing the size of the bottle containing the chloroform.

In the Report⁴ of the Special Chloroform Committee appointed by the British Medical Association to investigate methods of quantitatively determining the presence of chloroform in the air and in the living body, Vernon Harcourt's method of combustion by means of a platinum wire raised to incandescence by an electric current, and Waller's oil-absorption method, are described and compared.

In the case of the estimation of the drug in the blood of chloroformed dogs, Harcourt's method was compared with Schmiedeberg's, which is by combustion over magnesium oxide, and estimation of the chloride. The results of the examination of blood drawn from a dog during deep chloroform anæsthesia, and at death, are also given; and one conclusion of the Committee

is that the weight of chloroform recoverable from the body of a small animal (rat) killed by the inhalation of chloroform amounts to 1 part in 10,000 of the body-weight, a quotient which is about twice that estimated by Snow as being lethal to the human subject. In the second report the committee is unanimously of opinion that the effect of chloroform varies in proportion with the amount of chloroform in the mixture of air and chloroform administered, and with the rate and depth of respiration. Experiments on the effect of chloroform in different doses on the isolated mammalian heart show that the heart muscle rapidly takes up the chloroform offered to it in the vessels of its coronary system, and that the quantities it takes increase with the increasing tension of the chloroform in the solution circulating through it. The chloroform was found to behave almost as though it were in solution in the muscle. The observations showed that differences in susceptibility to chloroform occurred in the cats' hearts which were the subject of the experiments, and this was specially noticeable with the weaker solutions. The Committee then proceeded to investigate the practical questions:—

(1,) What quantity of chloroform must be actually inhaled to produce narcosis?

(2,) What is the effect of such a quantity upon the vitality of the organism?

(3,) Whether there is any accumulation of chloroform within the body during the prolonged administration of a constant quantity?

The first question was the subject of actual experiment at one meeting of the Committee, when it was found that in two cases 0·5 per cent was insufficient to produce unconsciousness, and that less than 2 per cent was sufficient to produce complete narcosis.

Interesting details are given of the trial of Vernon Harcourt's inhaler by Dudley Buxton and Tyrrell. They prove that in many cases as low a proportion as 0·5 per cent is sometimes sufficient to produce narcosis, while it may be maintained with about 1 per cent. This is, of course, a considerably smaller proportion than has generally been believed necessary.

Guthrie⁵ records a further list of cases similar to those published by him in 1894,⁶ in which death had occurred some hours after the inhalation of chloroform. The recovery from the anæsthetic was as a rule good, but after a varying number of hours disquieting symptoms were noticed, the most common being

often great excitement and loud crying resembling that which accompanies acute meningitis. Less frequently, the patient remained quiet, but there was in nearly all the cases persistent vomiting, the vomit, sooner or later, resembling dregs of beef tea. On *post-mortem* examination, the liver was found to be enlarged, and of a pale, fawn colour, with the intra-lobular veins showing as purple dots. Oil could be easily scraped from a section with a knife, and microscopically the peripheral parts of the lobules were found to contain many oil globules. Guthrie considers that this is a condition of fatty degeneration which exists before the operation, and that the chloroform is the "last straw" in producing death. It has been shown by actual experiment that fatty degeneration may be produced by the prolonged administration of chloroform, and to a much slighter degree by ether; and when a fatty liver is suspected before the administration of an anæsthetic, ether should be preferred to chloroform.

A case of interest to all anæsthetists was tried in Edinburgh on April 1st and 2nd, 1903, in which a widow sued a general practitioner for damages, on account of the death of her husband under chloroform, which was administered by the defendant. The deceased was suffering from an injury to his arm, and it was necessary that some adhesions should be broken down. For this purpose chloroform was given by the defendant, who also performed the operation, no other practitioner being present. When the operation was finished, the patient was found to be dead, and no means of restoration were of any avail. After a trial of two days, the jury returned a unanimous verdict for the defendant. The case was fully reported in the daily papers.

Nitrous Oxide.—Maughan⁷ reports a case of death following the administration of nitrous oxide for the incision of an acutely inflamed tonsil. The patient, a young woman, was in considerable distress, with a very fast pulse-rate. She was seated in a chair, lightly clad, with a dental prop between the teeth. Nitrous oxide with two breaths of air was given, and when anæsthesia was obtained the face-piece was removed, but the patient had stopped breathing. She was placed on the floor, the tongue drawn forward with forceps, ammonia held to the nose, and artificial respiration by Howard's method was tried for about fifteen seconds. As no air seemed to enter, laryngotomy was performed, when a full inspiration was taken. The corneal reflex never returned, and though respiration and circulation

continued to some extent, the patient died at the end of twenty minutes from the beginning of the administration. On *post-mortem* examination, there was found to be extensive angina Ludovici, and some œdema of the glottis, but though the mitral orifice was small, the heart seemed normal.

Ethyl Chloride.—This anæsthetic has been more extensively tried during the past year, with good results. McCardie^s has given it in 620 cases, and quotes Seitz of Konstanz, who had collected 1,600 cases reported throughout the world up till the end of April, 1902, with only one death, and that in a child of one year and nine months, who was suffering from diphtheria and required tracheotomy. The condition of the child was so serious that the anæsthetic in this case must not be too severely blamed. Since this time, of course, many more thousands of administrations have taken place.

In its action, ethyl chloride is rapid both in its absorption and elimination, and this is a point in its favour. During the induction of anæsthesia there appears to be little change in the tension of the pulse, but in deep anæsthesia the rate is somewhat diminished. Respiration, however, is markedly stimulated, both in frequency and depth. The colour of the face is improved because of vaso-dilatation, which often leads to sweating, and a well-marked rash resembling that noticed during the administration of ether has been observed. As a rule, it is inhaled quietly by most patients, except those who are very nervous or addicted to alcohol, and excitement is rare. The rapidity of induction, and the amount of excitement seem to depend on the degree of the exclusion of air. McCardie now gives ethyl chloride in doses of 3 or 5 c.c., with an Ormsby inhaler, and gets better results than he did when he used an inhaler admitting more air. In 274 timed administrations his results were as follows:—

77 DENTAL CASES

Duration of Induction.		Duration of Anæsthesia.	
Average	50.9 seconds	Average	71.3 seconds
Longest (faulty administration)		Longest Case	2½ minutes
	2½ minutes	Shortest	30 seconds
Shortest	20 seconds		

197 ADENOID OR ADENOID AND TONSIL CASES.

Duration of Induction.		Duration of Anæsthesia	
Average	51.9 seconds	Average	64.6 seconds
Longest Case	2 minutes 10 secs.	Longest Anæsthesia	2½ minutes
Shortest	15 seconds	Shortest	20 seconds

THE FIRST 274 CASES, DENTAL AND ADENOID COMBINED.

Period of Induction.		Duration of Anæsthesia.	
Average	51.4 seconds	Average	67.9 seconds

These are compared with Hewitt's Figures.

Nitrous Oxide alone :—

Induction.		Anæsthesia.	
Average	55.9 seconds	Average	30 seconds

Nitrous Oxide with Oxygen :—

Induction.		Anæsthesia.	
Average	110.5 seconds	Average	44 seconds

For dental or other operations the conjunctival reflex was retained; but for the removal of tonsils and adenoids, or in those cases where muscular relaxation was required, the conjunctival reflex was abolished, and the pupils were found dilated. For this degree of narcosis McCardie prefers the recumbent position, and in operations on the mouth and naso-pharynx has the foot of the table elevated about twelve inches, so that there is less risk of the blood entering the larynx.

Sickness is decidedly more common and persistent than after nitrous oxide, in fact many patients, especially if unprepared, vomit at once on coming round. Headache is also more common than after nitrous oxide. Apart from the usual difficulties due to obstruction of respiration from the tongue falling back, or the accumulation of blood in the mouth, McCardie has seen no circulatory or respiratory trouble due to the drug, though cases of asphyxia and syncope have been described abroad. Though he has used ethyl chloride for operations lasting up to twenty minutes, he thinks it of special use in shorter ones lasting up to ten minutes. He prefers the drug as sold by Duncan & Flockhart to what is known as **Kelene**, or Henning's "æther chloratus pro narcosi."

Since first writing this paper, McCardie adds that ethyl chloride should not be preferred to nitrous oxide for routine dental work, but for those cases in which a long anæsthesia is required, and the prolonged administration of gas by the nasal method is not advisable. He has also used ethyl chloride to precede ether in the ordinary administration of that drug for surgical operations in the place of nitrous oxide, and has more recently tried a mixture of 7 per cent of methyl chloride with ethyl chloride with good results, the object of the addition being to quicken the evaporation, and the carrying off of the ethyl chloride.

In conclusion, he thinks ethyl chloride an ideal anæsthetic in short operations in country practice, on account of its portability and the satisfactory narcosis obtained by it.

Lepage and Lorier⁹ advocate the use of ethyl chloride in obstetric practice, for the purpose of diagnosis, for version or the application of forceps, for the removal of the placenta or membranes by hand, or for suturing the perinæum. In actual labour it possesses a great advantage over chloroform in the rapid return of the patient to consciousness, so that she can then aid in the expulsion of the fœtus. Burnet¹⁰ also recommends ethyl chloride for short obstetrical operations.

Ethyl Chloride combined with Nitrous Oxide.—Hewitt¹¹ at the annual general meeting of the British Dental Association demonstrated a new method of combining the effects of ethyl chloride with those of nitrous oxide.

An ordinary gas bag is more or less completely filled—according to the physique of the patient—with nitrous oxide, the vulcanite tap at its lower extremity turned off, and the bag detached from the tube which connects it with the gas cylinder. From 3 to 5 cc. of ethyl chloride are introduced into a glass tube with thick walls, which is attached to the vulcanite tap by means of a piece of indiarubber tubing. After the usual preparations the face-piece is applied, and one or two breaths of nitrous oxide are allowed through the valves. The valves are then thrown out of action by turning the upper tap of the stop-cock, and re-breathing into the bag at once takes place. The vulcanite tap is then turned, and the ethyl chloride thrown into the bag by tilting the glass tube.

If a short anæsthesia is required the inhaler may be removed when it seems advisable to give the patient some air; but if an available anæsthesia of from a minute to a minute and a half is desired, the patient may be allowed to inhale till the pupils are dilated, the conjunctival, or even the corneal reflex is lost, the breathing becomes deep and snoring in character, and the muscles are relaxed. The best results are obtained when the patient has not taken food for about four hours; and Hewitt recommends that whenever possible the mixture should be given between twelve and one o'clock, after a light breakfast at eight a.m.

He thinks that muscular relaxation is more complete with this method than with ethyl chloride administered alone; and that if the patient has been prepared as he suggests, the unpleasant after effects are less frequent.

Somnoform.—This mixture of 60 parts of ethyl chloride with 35 of methyl chloride and 5 of ethyl bromide, was mentioned in the last volume of the *Medical Annual*, and since then has been more extensively used.

Cole¹² reports the results of some experiments done in the Cambridge physiological laboratories on the action of somnoform and ethyl bromide. With regard to somnoform, his conclusions are :—

(1,) The chief danger being a paralysis of respiration, careful watch must be kept on the respiratory movements.

(2,) Owing to the depression or paralysis of the peripheral endings of the cardio-inhibitory nerve fibres, and the comparatively slight action of the heart itself, there is no danger of heart failure, provided that respiration has not ceased.

(3,) After cessation of the respiratory movements, it is easy to restore the animal by artificial respiration.

Embley¹³ showed that when the vagi are paralysed chloroform is robbed of its chief danger, and Cole suggests that this might be effected by administering ethyl bromide before chloroform.

A discussion on somnoform was opened at the Society of Anæsthetists¹⁴. Foster Cross administered the drug in a Rendle's mask with the holes lightly plugged with lint. He found the signs of anæsthesia to be flushing of the face, deep, regular breathing, fixed position of the eyes, pupils at first widely dilated, but contracting later, and the loss of the conjunctival and corneal reflexes. The pulse, rapid at first, becomes slower and keeps regular. Relaxation of the muscles he found uncertain. The average anæsthesia obtained was longer than that with nitrous oxide, and unaccompanied by cyanosis or jactitation. Recovery was not rapid in all cases, and vomiting was not at all infrequent. Patients complain of the smell of the ethyl bromide, and the mixture is very liable to decomposition.

Swan uses for an inhaler a Rendle's mask fitted with an india-rubber bag, and with this he has found less rigidity than when using Rolland's mask. He found that the best guide to anæsthesia was to move the fingers backwards and forwards in front of the patient's face till the eyes become fixed.

Dudley Buxton and McCardie strongly deprecated the use of fancy names, as "narcotile," "kelenc," etc., and considered that the anæsthetic properties of the mixture known as somnoform are mainly due to the ethyl chloride which forms the bulk of it,

while the addition of the ethyl bromide makes it objectionable on account of its very unpleasant smell.

Harvey Hilliard considered the administration with Rolland's mask unsatisfactory, on account of the unpleasant sensations to the patient, and because of the struggling or rigidity of the muscles which occurs. He obtains better results by administering with an Ormsby inhaler, and finds that $2\frac{1}{2}$ cc. produces a most satisfactory anæsthesia in children for the removal of tonsils and adenoids. After-vomiting was very common, and occasionally intense headache lasting several hours.

Kirkpatrick¹⁵ in 78 unselected dental cases found the average time of induction 54.9 seconds, the average length of anæsthesia 65.1 seconds, and the average quantity of somnoform used 4.5 cc. The drug was administered from a modified Ormsby inhaler, and the signs of anæsthesia noticed were slightly snoring respiration, fixity of the eyeballs, and complete relaxation of the muscles. The anæsthesia was unaccompanied by any cyanosis or jactitation, and resembled that obtained with gas and oxygen. Recovery as a rule was rapid and satisfactory. He concludes that though with somnoform as good an anæsthesia may be obtained as with nitrous oxide, emergencies which may arise are not so easily dealt with, and that for prolonged dental operations the most trustworthy method is the administration of nitrous oxide by the nose.

Hewitt,¹⁶ in two lectures on the anæsthetisation of so-called "difficult" and "bad" subjects, divides these patients into six classes:—

(1,) Persons whose general health is good, but who possess some physical peculiarity rendering them more or less liable to intercurrent embarrassment or arrest of breathing.

(2,) Persons whose respiratory tract is in some way encroached upon, or whose respiration is in some way hampered by pathological or other conditions.

(3,) Persons suffering from certain grave visceral or constitutional affections.

(4,) Highly nervous and excitable patients; those suffering from various nervous affections; and those who have become addicted to the excessive use of alcohol, tobacco, morphine, or other drugs.

(5,) Patients displaying in a state of combination or association the characteristics of two or more of the foregoing classes.

(6,) Patients who prove to be difficult or bad subjects without any discoverable cause.

The treatment of these patients is considered in detail, and ether is recommended to be tried in most cases except those in classes 2 and 3 ; but for details the paper should be consulted. Hewitt specially points out the advantage to be gained in very many cases by obtaining a good air-way through the mouth by means of a small prop placed between the teeth as soon as the patient is unconscious. He also recommends the use of the C.E. mixture ; that is to say, two parts of chloroform with three parts of ether, or in other words the ordinary A.C.E. mixture without the alcohol.

Manual Compréssion of the Heart for Syncope.—Starling¹⁷ reports an interesting case in which a patient had been anæsthetised with ether, and the vermiform appendix removed, when respiration and circulation both failed. The surgeon then introduced his hand into the abdomen and felt through the diaphragm that the heart was not beating. He then gave it a squeeze or two, and felt it start again. Artificial respiration was continued for a few minutes, and the patient eventually recovered.

In cases of syncope from chloroform, compression of the heart has been recommended as the appropriate treatment by Schiff in 1874, and Prus in 1899. Twelve cases have been recorded in which it has been tried, but this is the first which has eventually proved successful. To reach the heart it was at first recommended to resect the fifth and sixth ribs, but more recently an incision through the diaphragm has been advised, though in Starling's case it was fortunate that neither of these was necessary, and no time was lost.

Lamb¹⁸ reports a case of cessation of respiration in a patient under the influence of the A.C.E. mixture for an operation on a cerebellar abscess. Tracheotomy was performed, and ether and oxygen administered by means of artificial respiration by Howard's method. Strychnine, digitaline, and ether were also injected, and a strong galvanic current applied ; but as no very good result was obtained by these measures it was thought that the failure of respiration was of intra-cranial origin, and the operation was continued while artificial respiration was kept up for one hour and a quarter. At the end of this time the patient was breathing naturally, and sufficiently conscious to resist the dressing of the operation wound. His condition remained

fairly satisfactory for thirty hours, when respiration again ceased and he died. Lamb considers that the application of the 20-cell galvanic battery, with a small negative electrode over the region of the phrenic nerve, and the positive over the lower intercostal space, was the chief factor in the recovery.

REFERENCES.—¹*Trans. Soc. Anæsth.* vol. vi; ²*Brit. Med. Jour.* July 18, 1903; ³*Lancet*, July 24, 1897; ⁴*Brit. Med. Jour.* July 10, 1902; ⁵*Lancet*, July 4, 1903; ⁶*Ibid.*, Jan. 27, Feb. 3, 1894; ⁷*Trans. Soc. Anæsth.* vol. vi; ⁸*Lancet*, April 4, 1903; ⁹*Gaz. Hebdom. de Méd. et de Chir.* May 4, 1902; *Int. Med. Mag.* Oct. 1902; ¹⁰*Med. Press*, Dec. 10, 1902; ¹¹*Brit. Dent. Jour.* 1903, p. 615; ¹²*Brit. Med. Jour.* June 20, 1903; ¹³*Trans. Soc. Anæsth.* vol. v; ¹⁴*Ibid.* vol. vi; ¹⁵*Med. Press*, April 22, 1903; ¹⁶*Lancet*, Jan. 10, 17, 1903; ¹⁷*Trans. Soc. Anæsth.* vol. vi; ¹⁸*Lancet*, May 16, 1903.

ANÆSTHESIA, (Local, by Cocaine, etc.,)

Priestley Leech, M.D., F.R.C.S.

Anæsthesia by cocaine may be induced by local injection into the tissues round the seat of the operation, by injection into the nerves supplying the part upon which one wishes to operate, and by injection into the spinal sub-arachnoid space. There has not been much recent literature on the two first methods of using cocaine, and it is difficult to judge how much use is made of this form of local anæsthesia. Personally we think too little use is made of the **Local Injection** of cocaine, or preferably eucaine, into the tissues in many minor surgical operations. If the directions given are strictly followed, no pain is felt, and fairly large sebaceous cysts or bursæ patellæ can be treated; and gastrostomy or colotomy can be performed without the patient feeling any pain.

Gibbon¹ reports a case of intra-neural injection of **Cocaine** for amputation of the leg. He says this method should be limited to cases where a general anæsthetic is contra-indicated, but it is specially suitable to emergency hernia operations. A warning is needed to those who are not familiar with the method, *viz.*, before trying the method in the larger cases, one must have learned to use it in the smaller ones. The solution of cocaine must be freshly prepared, and sterile. In the case reported the patient, a man fifty years old, had extensive tuberculous disease of the ankle-joint and bones of the tarsus, and his general condition contra-indicated a general anæsthetic. Fifteen minutes before operation he received $\frac{1}{4}$ grain of **Morphia** and $\frac{1}{150}$ of a grain of **Atropine** hypodermically. The sciatic and anterior crural nerves were exposed by Schleich's infiltration anæsthesia, and

both nerves were injected with a 1 per cent solution of cocaine ; anæsthesia was complete in eight minutes, and no pain was experienced by the patient. A year afterwards no changes were found to have taken place in the nerve.

The evidence as to the use of **Intra-spinal Injections** of cocaine is somewhat conflicting. The pure alkaloid may be somewhat difficult to obtain, and samples vary very much with regard to their power of anæsthesia. It is difficult to isolate from isotropyl cocaine, a cardiac depressant of great potency, and probably the cause of some of the deaths reported as due to the use of cocaine. A temperature above 180° will more or less rapidly destroy the drug, and Van Horne, of New York, sterilises a solution as follows : A 2 per cent solution is made in sterilised water, and 25 minims of the solution are placed in small glass capsules, and these are exposed to a temperature of 170° for four hours on four successive days.

The reports on its use are more frequent in foreign literature, as noticed in last year's *Annual*, but two English surgeons have reported cases of operation under its influence. Dr. A. W. Lea, of Manchester,² reports several, most of them abdominal cases. In all the analgesia was complete with three exceptions, in one of which the patient found the operation quite bearable, and in the other two chloroform had to be given. He thinks the two great risks to be the toxic effect of cocaine, and the danger of sepsis, as cocaine solutions cannot be boiled without destroying the solution.

The use of **Tropacocaine** has been again suggested by Kozlowski.³ He says the distressing effects (headache, dyspnœa, perspiration, and fever) which accompany the injection of an aqueous solution of cocaine into the spinal canal, are due directly to the irritating effects of the water and the drug. Kozlowski has used tropacocaine dissolved in cerebro-spinal fluid as follows : He first weighs out 0.05 gram of dry pulverized tropacocaine in a dry warm sterilised glass dish. He then introduces the needle between the second and third or between the third and fourth lumbar vertebræ, and allows 5 grams of cerebro-spinal fluid to drop on the tropacocaine. By shaking the glass dish the tropacocaine completely dissolves, and forms a one per cent solution in the cerebro-spinal fluid without the addition of any water ; this solution is sucked up in the hypodermic syringe and injected into the subarachnoid space. Tropacocaine (Merck's) has been employed from the original bottle without any previous sterilisation.

Neugebauer⁴ also recommends tropacocaine, and says the solution can be freshly made and boiled immediately before use. It is injected in doses varying from 0.0375 gram (= circa $\frac{1}{2}$ grain) to 0.1 gram (= circa $1\frac{1}{2}$ grains). He believes that 0.06 gram ($\frac{9}{10}$ of grain) should be regarded as the maximum dose.

Barker⁵ has a good article on a somewhat newer method of producing local analgesia. Dr. Braun, of Leipsic, had used **Adrenalin** in conjunction with **Eucaïne**. His observations were based upon the fact that anything which retards or diminishes the circulation of the blood in a part infiltrated with one of the analgesic agents, enhances the potency of the latter; this is seen when the part injected is chilled, or a constricting band is placed about the part, and it was found that adrenalin used in conjunction with eucaïne had the same effect; adrenalin used alone had no analgesic effect whatever. Barker tested this on his own arm, and then on his cases, with results far superior to those produced by eucaïne alone. The most convenient way of preparing the solutions used are as follows: Powders containing β eucaïne 0.2 gram (= 3 grs.) and pure chloride of sodium 0.8 gram (= 12 grs.) are kept in thick glazed paper ready for use. These make 100 c.c. (= $3\frac{1}{2}$ ounces) of the solution. 100 c.c. of boiling distilled water are measured off and the contents of one of the packets are added, and then 1 c.c. of Messrs. Parke, Davis & Co.'s solution of adrenalin chloride is added when the solution has cooled. As the adrenalin solution is 1-1000 we have now 100 c.c. of normal saline solution with 2-1000 β eucaïne and 1-100,000 adrenalin chloride in it; i.e., distilled water 100 grams, pure chloride of sodium 0.8 gram, β eucaïne 0.2 gram, and adrenalin chloride 0.001 gram. The best way to add the adrenalin solution is to drop 18 drops of the solution from the bottle into the water, which has been already boiled and cooled. Before using the adrenalin solution, hold up the bottle to the light, and see it is clear and without precipitate. The analgesic solution thus prepared is kept in a Jena glass beaker in which it has been boiled and is carefully covered with a glass dish. A glass and metal syringe with rubber washers is used, fitted to Frienstein's needles.

. The *modus operandi* of this method in operating for the radical cure of inguinal hernia is as follows: The nerves to be rendered analgesic are, ilio-inguinal, ilio-hypogastric, the genital branch of the genito-crural, and the inferior pudendal branches of the

lesser sciatic. The hernia is first reduced, and the index finger is thrust with the skin as far as possible into the external ring. Along the finger the needle is entered, and the inguinal canal is filled with 10 cubic centimetres of the solution, an endeavour being made to inject it all around the neck of the sac so as to reach at one spot or another the genital branch of the genito-crural nerve. The needle is then entered at the external extremity of the line of incision, and the solution is infiltrated into the superficial layers as far as the root of the scrotum, so as to make the resulting wheal at least an inch longer at each end than the incision. The needle is then entered about half an inch to the inside of the anterior superior spine of the ilium, and pressure on the piston is at once begun slowly as it is thrust towards the ilio-inguinal nerve to the depth of about an inch in moderately fat patients; the needle is then partly withdrawn and thrust in different directions towards the usual course of the nerve trunk, until the whole ten cubic centimetres are used. The same manœuvre is repeated at a point about one inch above the middle of Poupart's ligament, where the ilio-hypogastric nerve is most conveniently met. The leg is raised, and another syringeful is injected along the ramus of the pubis and the root of the scrotum or labium. In all 50 c.c. of the solution have been used. It is necessary where adrenalin has been used to wait for twenty minutes from the last injection for the full effect to develop, when the whole field of the operation ought to be blanched, and the primary artificial œdema will have almost disappeared. If the skin is not white and bloodless, the solution is bad. The part to be operated on can be tested with the point of a needle, when it will usually be found to be insensitive to pricks though not to the touch. The sac must be dissected out without any dragging, and in the female it must be remembered that the round ligament is especially sensitive, and its nerve supply from the genital branch of the genito-crural must be adequately treated with the solution.

No secondary hæmorrhage has so far been seen. Barker has done thirty operations, among which are radical cure of hernia, strangulated hernia, castration for tuberculous testes, removal of varicose veins, psoas abscess, loose body in knee, tumour of neck, colotomy, Thiersch skin grafting, and cystic adenoma of thyroid. He suggests the making up of adrenalin chloride in small glass capsules containing sufficient for 100 c.c. of solution.

Anæsthesia by Narcosis.—Schicklberger⁶ has tried Schneiderlein's anæsthesia with **Morphine-Scopolamine** in eleven cases, and has discontinued using it as the results were not satisfactory. (See "Scopolamine," p. 34).

REFERENCES.—¹*Phil. Med. Jour.*, May 2, 1903; ²*Lancet*, March 29, 1902; *Med. Chron.* Fourth Series, vol. ii, No. 3, p. 161; ³*Cent. f. Chir.*, Nov. 8, 1902; ⁴*Wien. klin. Woch.*, Nos. 50, 51 & 52, 1901; ⁵*Lancet*, July 25, p. 203, 1903; ⁶*Wien. klin. Woch.*, Dec. 18, 1902, *Brit. Med. Jour.*, Jan. 24, 1903.

ANASTOMOSIS OF NERVES. (See "Facial Nerves.")

ANEURYSM.

Prof. A. H. Carter, M.D., F.R.C.P.

Among the minor signs of aneurysm of the aorta, Dorendorf¹ draws attention to the obliteration (in many cases) of the left supra-clavicular fossa, along with engorgement of left external jugular vein; also to a rhythmical oscillation of the head.

The inequality of the pupils, or anisocoria, which is often observed in cases of thoracic aneurysm, is difficult to explain. There are strong anatomical and physiological objections to the current view that the phenomenon in question is caused by some direct interference with the sympathetic nerve by the sac of the aneurysm. Drs. Wall and Walker² have investigated the phenomenon, and conclude that it is usually due to inequalities of blood-pressure in the ophthalmic arteries, resulting from the abnormal vascular condition. The evidence upon which they rely is as follows:—

1.—(a) Alterations in vascular conditions may be associated with alterations in the size of the pupils: (i) High arterial tension is associated with small pupils; and (ii) low arterial tension is associated with large pupils. (b) The physical explanation of this phenomenon is probably to be found in the spiral structure of the vessels of the iris.

2.—Local inequalities of blood-pressure may therefore be associated with inequalities of the pupils. (a) Clinical evidence: (i) Enlargement of pupils is frequently associated with diminution of the temporal and radial pulses on the same side of the body; (ii) Obstruction of the carotid artery on one side of the neck is associated with enlargement of the pupil upon the same side. (b) Experimental evidence: (i) Obstruction of the carotid in rabbits is associated with enlargement of the pupils on both sides owing to the freedom of circulation at the base of the brain; (ii) Injection of water into a carotid artery of a dead rabbit causes

narrowing of the pupil upon the same side ; (iii) Digital compression of the carotid artery in the human subject is associated with enlargement of the pupil upon the same side.

On the other hand, Dr. Charillons³ maintains that pupillary inequality is due to syphilis, which is known to act as a powerful cause of aneurysm, and which is the usual, if not the invariable antecedent of the Argyll-Robertson pupil.

Dr. Hare⁴ reports a most interesting case of thoracic aneurysm in which treatment by electrolysis was adopted with some success. He concludes that in properly selected cases, it is a valuable measure, and prolongs life. Also that the operation is neither painful nor dangerous.

REFERENCES.—¹*Deut. Med. Woch.* July 10, 1902 ; ²*Lancet*, July 12 1902 ; ³*Rev. d'Oculistique*, July, 1902 ; ⁴*Therap. Gaz.* Jan. 1903.

ANEURYSM (Surgical Treatment). *Priestley Leech, M.D., F.R.C.S.*

The treatment of this condition by the **Injection of Gelatin** has given good results in many cases, but several instances of tetanus following its use have been reported. Dieulafoy¹ reports a fatal attack of acute tetanus where it was used for profuse hæmoptysis. The solution had been carefully prepared, and boiled for half an hour the; gelatin itself was found to contain the tetanus bacillus.

Guthrie Rankin² reports four cases which were benefited by this treatment. 100 c.cm. of a 2 per cent solution were injected at each sitting, and the average number of injections were seventeen. Three were cases of aortic aneurysm and one of abdominal. Relief was given in all cases, and the beneficial results were probably permanent. Claudio Mancini³ reports two cases which were improved by gelatin injections; injections by the skin were more efficacious than those by the bowel.

P. Krause⁴ says tetanus should be avoided if the solution of gelatin is boiled for half an hour at a time at 212° F. for five successive days.

Dr. John F. Anderson⁵ examined seven samples of gelatin. One showed tetanus spores; and two others showed a spore whose identity was not proved, but which closely resembled that of tetanus.

D'Arcy Power and Colt⁶ report a case of aneurysm of the abdominal which had been treated by gelatin injections without any marked alteration, and in which they introduced **Wire** into

the sac through an instrument devised by Mr. Colt ; 80 inches of silver wire with a clotting surface of 3·7 sq. inches. The actual introduction of the wire occupied only two minutes and a half, and there was no trouble in closing the hole in the sac with a few points of suture. The patient died fifty hours after operation. The necropsy showed that the aneurysm sprang from the abdominal aorta just below the diaphragm, and the aneurysm had been diagnosed as one of the celiac axis or one of its branches. The sac was full of recently clotted blood in which the wire was entangled. On cutting across the aorta, a 7-inch loop of the wire was found projecting up into the arch of the aorta.

Jonnesco⁷ reports a case of arterio-venous aneurysm of the carotid artery and internal jugular vein treated by **Excision** of the tumour. The operation was a difficult one, but the patient recovered, and showed no signs of disturbance of the circulation or nutrition of the brain. It is asserted that this is the only case recorded of an arterio-venous aneurysm of the neck being treated by excision of the sac, and shows the possibility of tying the two great vascular trunks of the neck on one side without producing any cerebral disturbance.

Mr. William Taylor⁸ reports a very interesting case of traumatic aneurysm of the left subclavian artery produced by a simple *fracture of the left clavicle*, in which a small spiculum of bone projecting downwards, at right angles from the inner end of the outer fragment, had wounded the artery. General treatment with rest had no influence on the tumour, which appeared as if it might burst. Operation was undertaken with the idea of ligating the first part of the artery. After two hours' careful and dangerous dissection the attempt was abandoned, and only two courses seemed open : an amputation at the shoulder joint, and following up the axillary artery to the site of the injury, or incision of the tumour, turning out of the clots, and endeavouring to secure the injured vessel. The last was done, and the fingers were thrust down to the artery, which was grasped and the blood-flow controlled until pressure from without could be applied. The vein and artery were so adherent to each other that a ligature could not be passed, and forceps were applied to the artery. The patient recovered.

Rudolph Matas⁹ suggests a new method of treatment for aneurysm based on **Arteriorraphy**. He says the method is applicable to all aneurysms in which there is a distinct sac, and

in which the cardiac end of the main artery can be provisionally controlled (*Fig. 3*). It is especially applicable to all forms of peripheral aneurysms of the larger arterial trunks (carotid, axillary, brachial, iliac, femoral and popliteal). It is particularly indicated in the treatment of

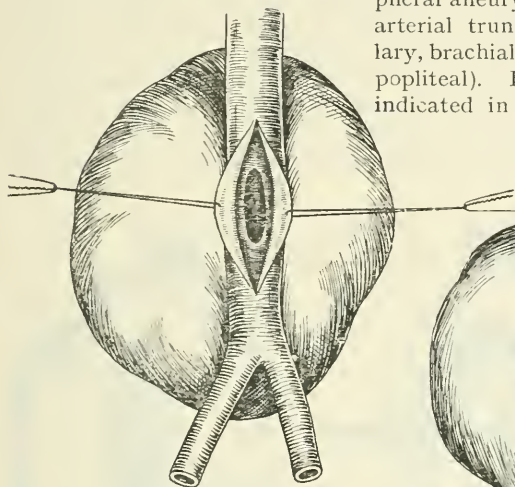


Fig. 3.—To show sacciform aneurysm, viewed from the posterior side. The artery continuous throughout, and simply attached to the sac at the orifice of communication. The artery has been laid open on its posterior surface, showing that the orifice of communication can be closed on the aneurysmal side, without occluding the lumen of the artery.

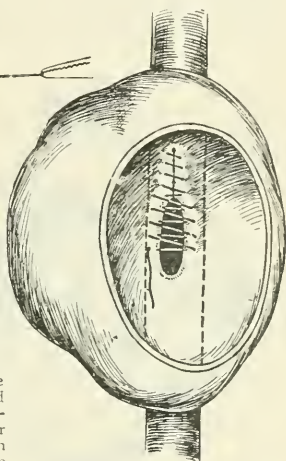


Fig. 4.—Same sac opened. The dotted lines indicate the position and relations of the main artery to the sac, and to the orifice of communication. The object of the operation in this case is to close the orifice of communication without obliterating the main artery. The orifice is shown with continued suture in the figure.

traumatic aneurysms in which the wounded artery communicates with a well developed and circumscribed sac, and in all fusiform and sacculated aneurysms, whether traumatic or idiopathic, in which the conditions for securing provisional hæmostasis can be obtained. The steps of the operation are shortly as follows:—

(a.) Prophylactic hæmostasis. By Esmarch elastic constrictor, or if the aneurysm is situated high up in a limb or in neck, compress artery by a traction loop passed under the artery and held by an assistant, or by forceps. In carotid and other aneurysms the artery on both sides should be controlled.

(b.) After all pulsation has ceased, make a skin incision parallel with sac, and down to it and exposing it.

(c,) Incise sac, turn out blood and clots, and expose the interior of the cavity by vigorous retraction of its edges (*Fig. 4*). All the orifices in the sac should be thus exposed. In the fusiform variety the continuity of the artery cannot be usually restored, and the openings into the sac from the artery are sutured up, and a careful search should be made for any openings due to collateral arteries; if any such are found they also should be sutured. When the hæmostasis is complete, the interior of the sac should be gently but thoroughly scrubbed with

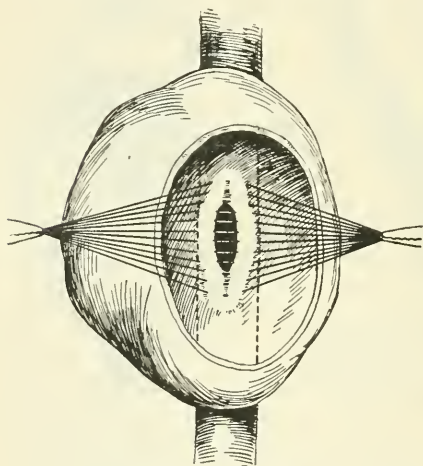


Fig. 5.—Closure of the orifice of communication with interrupted instead of continued suture. When the sutures are tightened they should bring the marginal surfaces in broad apposition without projecting into the anterior portion of the artery or encroaching excessively upon the lumen of the vessel.

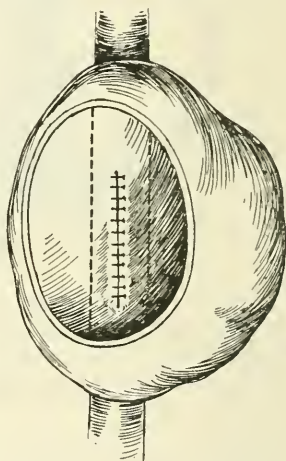


Fig. 6.—Obliteration of the orifice of communication completed. Interrupted sutures shown in this figure. If the suture has been properly applied, the hæmostasis will be complete, and the circulation in the main artery restored.

gauze soaked in sterile salt solution to clear it of laminated blood clot, and prepare the interior for plastic reaction. Silk, catgut, or kangaroo tendon may be used for sutures. The round, full curved needles with long eyes and prismatic points are the best. The continued suture as a rule will do well. When suturing the orifices a Lembert suture should be used, so as to bring intima into contact with intima. The sac is then obliterated by turning the relaxed flaps of skin into the interior of the cavity, to be held there by sutures (*Figs. 5, 6*).

In sacciform aneurysms the opening is sutured, and the continuity of the artery is thus restored. Care must be taken that the suture threads will not come in contact with the blood stream. The sac is obliterated as before.

Four cases are given, and the clinical reports are published in full in *Trans. Amer. Surg. Assoc.* for 1902.

Muir¹⁰ reports a case of traumatic aneurysm of the gluteal artery, which was successfully treated by incision of the sac and ligation of the artery during intra-peritoneal compression of the internal iliac.

REFERENCES.—¹*Bull. de l'Acad. de Méd.* No. 19, 1903, *Brit. Med. Jour.* July 11, 1903; ²*Brit. Med. Jour.* June 27, 1903; ³*Rif. Med.* May 1, 1902; ⁴*Berlin klin. Woch.* July 21, 1902; ⁵*Therap. Gaz.* Dec. 1902; ⁶*Brit. Med. Jour.* June 27, 1903, and *Lancet*, Sept. 19, 1903; ⁷*Bull. et Mém. de la Soc. de Chir.* Bucarest, Nos. 2 and 3, 1902, *Brit. Med. Jour.* Jan. 31, 1903; ⁸*Med. Press*, May 27, 1903; ⁹*Ann. Surg.* Feb. 1903; ¹⁰*Lancet*, Aug. 29, 1903.

ANGINA PECTORIS.

Prof. A. H. Carter, M.D., F.R.C.P.

Dr. Colbeck¹ criticises the various current views regarding the causation of angina pectoris, and suggests an ingenious hypothesis of his own. He draws special attention to the fact that the nervous and muscular degeneration so generally found in the hearts of subjects, has an irregular and patchy distribution. So long as the heart is acting quietly, these areas are able to take their share in resisting intra-cardiac pressure, but when its action is increased by exertion or emotion and the like, this is no longer the case, and the areas in question undergo more or less distension and stretching, and thus give rise to pain. When the proportion of degenerated areas is small as compared with the area of normal tissue, the rhythm and the character of the pulse may remain unaltered (as is usually the case); but when these proportions are reversed, the heart is liable to falter and become irregular, and the blood-pressure falls. Further, the contradictory and antagonistic impressions conveyed to the cardiac centres in the medulla, by reason of concurrent contraction and expansion of the ventricular wall during systole, plausibly account for the sensation of impending death, which is so prominent a feature of anginal attacks. Again, occasional sudden death may be explained either by the sudden arrival at the medullary centres of mutually antagonistic impulses which may suddenly inhibit the action of the heart, or by the local implication by disease of Kronecker's centre in the intra-ventricular septum. Angina *sine dolore* is explained on the assumption

that the deterioration of the cardiac wall is so great that it fails to react to stimuli which ordinarily would give rise to pain. So-called "pseudo" anginal attacks, in Dr. Colbeck's opinion, essentially result from vaso-motor ataxia, giving rise to sudden exposure of the heart to increased pressure. Such vaso-motor phenomena, when present in true angina, are secondary features.

Sir Lauder Brunton in a subsequent letter² does not allow that Dr. Colbeck's theory is proved, and believes that in one form at least of angina pectoris the pain is due to ineffectual efforts on the part of the heart to empty itself in face of increased arterial pressure, like the pain excited in the colon or bladder under analogous circumstances.

Brener³ speaks favourably of the administration of **Theobromine** as a means of lessening the frequency and acuteness of anginal attacks, especially in those characterised by abdominal pain of an indefinite type. The best preparation, he says, is **Diuretin**, of which 40 to 45 grains should be given daily in divided doses, well diluted.

REFERENCES.—¹*Lancet*, March 24, 1903; ²*Ibid*, April 4, 1903; ³*Med. Rec.* Nov. 15, 1902.

ANGIOMA of Synovial Membranes and of Muscle.

(See also "Neoplasms.") *Priestley Leech, M.D., F.R.C.S.*

Eve¹ reports four cases of this condition. Few cases have been reported, but the condition cannot be so rare as supposed, as he has seen two others in addition to these. The feature of interest is the diagnosis. All the cases occurred between the ages of ten and twenty-five, when tuberculosis of the joints is common; some of the patients complained of symptoms highly suggestive of tuberculosis, such as pain increased by movement, and two complained of starting of the limb at night. Pulsation was not observed, but in the first case it was noted that the swelling increased when pressure was made above it. Pressure upon the venous trunks above the tumour might have proved a diagnostic sign if it had been tried. The treatment has been by **Removal**.

REFERENCE.—¹*Brit. Med. Jour.* May 16, 1903.

ANKYLOSTOMA AND ANKYLOSTOMIASIS, (Uncinariasis).

James Cantlie, M.B., F.R.C.S.

The fact that the ankylostomum duodenale, and the condition of ankylostomiasis which the parasite gives rise to, has been met with amongst miners in Britain during the past twelve

months, requires a more careful study of this intestinal worm than has hitherto been bestowed upon it by British practitioners. J. G. Adami¹ gives an excellent account of the literature of the subject. Frölich in 1779, Dubini 1838 and 1843, and since these earlier writers many others, have contributed exact accounts of the disease. The names applied to the parasite have changed with advancing years. At first styled *aychylostoma* (Dubini), then *dochmius* (Dujardin), also *sclerostoma* (Cobbold), and until recently *ankylostomum* (or *anchylostomum*), the parasite has been recently re-christened *uncinaria* (Stiles) in U.S., the full name being *Uncinaria americana*. The name hook-worm is also accepted by many English-speaking people as singularly appropriate.

Although the term *duodenale* is invariably associated with the name, the worm really inhabits the upper part of the jejunum almost wholly, and it is there it exercises its pathological processes. The male is about $\frac{1}{2}$ inch, and the female $\frac{3}{4}$ of an inch in length, resembling a coarse thread in thickness, with a sharp hook at the anterior end. The eggs when extruded are elongated, partly segmented, and possess a thin shell; they occur in enormous numbers in the *fæces* of infected persons. To examine the *fæces* for the eggs of this parasite all that is required is to smear the surface of a slide on which a drop of water has been placed with a small (pin-head sized) quantity of the *fæcal* matter; apply a cover glass, and examine with a medium power. The eggs have to be carefully differentiated from those of *ascaris lumbricoides* (gelatinous covering: unsegmented): *oxyuris vermicularis* (thin shell: unsymmetrical outline); *trichocephalus dispar* (shell perforated at each pole: unsegmented).

The disease *Pani-Ghao*, or *ground itch* of Assam, is considered by Bentley² to be due to ankylostomes penetrating the skin. The eggs require an equable and fairly high temperature, and a moist soil to develop in. These conditions being more constant in tropical and sub-tropical countries, the parasite is mostly met with in warm climates; and these requisites of their being accounts for the prevalence of the worm amongst miners in colder climates.

The symptoms present in ankylostomiasis are those of anæmia, with all its attendant conditions of breathlessness, palpitation, pallor, and œdema of the lower limbs. Blood is at times met with in the stools. The anæmia is more of the character of chlorosis, and we are made familiar with the fact, inasmuch as in Egypt the disease is spoken of as Egyptian chlorosis. Blood

examinations also confirm the opinion that, although the abstraction of blood, and the hæmorrhage resulting from the bite of the parasite, must be very considerable, the condition of the blood more closely resembles that present in advanced chlorosis than that produced by mere loss of blood.

TREATMENT consists in administering **Thymol** subsequent to a spare diet for a day or two, and after the bowels have been well emptied by **Castor Oil**. The thymol is to be given in doses of from 10 to 60 grains, according to the condition and age of the patient. Baker³ recommends the drug to be given in three doses at intervals of either half an hour or some hours. The usual precautions in regard to food and purgatives should be taken as when using other anthelmintics. No spirituous liquors should be taken for at least six hours after giving thymol, owing to the solvent action alcohol has on the drug, and the danger of the alcoholic solution causing symptoms of poisoning. The physiological effects of thymol closely resemble those of carbolic acid. The drug can be administered in rice paper, or stirred up in water, and after the third dose, castor oil or other aperient is to be administered. The treatment is to be repeated in four or five days if ova continue to be met with in the fæces.

PROPHYLAXIS.—Haldane⁴ considers that the disease was imported into Cornwall by miners returning from working in mines in warm climates; the more recent introduction of the disease into the North of England is ascribed to the importation of some Italian miners. Infection is spread by pollution of the soil by fæces containing the ova of ankylostomes. The men in the mines are wont to defæcate where they please, and the polluted soil adheres to boots, tools, clothing, etc., and the hands becoming infected, the food is contaminated, and the ova conveyed to the stomach. The prophylaxis therefore consists in the provision of proper latrines for receiving the excreta where they may be disinfected, and in observing strict cleanliness of the hands before eating. When the soil in the neighbourhood of a camp or dwelling is widely contaminated, it is necessary that the place be abandoned for a time, and the earth ploughed up and disinfected by quicklime or other bactericides.

The result of the experiments of Loos showing the entrance of the ankylostome larvæ through the skin, necessitates still further care in handling these parasites, and preventing the men walking with bare feet on a soil to which the excreta of ankylostomata-infected persons have gained access.

Agramonte⁵ found the red cells varied between 1,700,000 and under 3,000,000 per c.c. The hæmoglobin varied from 22 to 30 per cent. Smith⁶ states that in Texas, U.S., out of 88 supposed healthy persons 8 were found with ankylostomes in their fæces. He also drew attention to the fact that the ankylostoma (uncinari) duodenale in man and the ankylostoma (uncinari) stenocephala in the dog, occurred in the same localities.

REFERENCES.—¹*Mont. Med. Jour.* March, 1903; ²*Jour. Trop. Med.* Dec. 1900; ³*Brit. Med. Jour.* March 28, 1903; ⁴*Ibid.* Jan. 24, 1903; ⁵*Rev. Med. Cubana*, Sept. 1, 1902; ⁶*Jour. Amer. Med. Assoc.* May 9, 1903.

ANTHRAX.

Priestley Leech, M.D., F.R.C.S.

The serum treatment of this condition has been more extensively tried by foreign surgeons than by British. Dr. Garzia Aluserindo¹ reports two cases, in both of which recovery is attributed to the use of **Sclavo's Serum**. Dr. Ciro Bothgnani² reports five cases of anthrax where it was used with some success; his conclusions are as follows: (a) Sclavo's serum possesses the power of curing the gravest cases of malignant pustule; (b) It prevents the aggravation of the early stages of anthrax with certainty; (c) With the use of the serum convalescence soon sets in, and is followed by recovery; (d) In extremely severe cases the use of intravenous injections of the serum should be tried, for it does not produce any unpleasant symptoms, and is more efficient than the subcutaneous injection; (e) Tanners can carry the germs of anthrax to their families, infecting others with whom they come into contact; (f) The authorities should insist on personal prophylactic measures to be observed by all tanners; (g) The anthrax bacillus dies in the healing pustules, so that the convalescents cease to be a source of contagion.

Sobernheim³ prepared an active serum which was able to protect sheep against lethal doses of anthrax bacilli some years ago, and he has now tried a combined method on sheep and oxen with marked success. He employed in addition to the serum an attenuated culture of the bacilli themselves, thus using an active and a passive immunisation.

REFERENCES.—¹*Gaz. deg. Osped.* March 8, 1903; ²*Ibid.* March 1, 1903; ³*Berlin klin. Woch.* June 2, 1902.

ANTITOXIN RASH.

E. W. Goodall, M.D.

Plates I and II represent a very common form of the rash that occasionally follows the subcutaneous injection of **Antitoxic Serum**. The rash here shown is a variety of erythema

multiforme. A close inspection of *Plate I* will show that the larger blotches have a sharply defined edge, which is darker than the central portion of the patch. The rash begins with small spots, which quickly increase in size and coalesce with one another. As the patch increases, the central part fades. The same condition is seen on the arms of the child shown in *Plate II*; but in this case the rash is ill-defined and blotchy on the face and lower extremities. In both cases the trunk is least affected.

Another common form of antitoxin rash is urticaria; the whole of the skin may be affected, and there is sometimes considerable œdema.

Less commonly the rash takes the form of papules and blotches with indefinite edges. These run together, and give rise to an appearance similar to that shown on the legs and face in *Plate II*. When the face is involved, the conjunctivæ may be injected.

Lastly, the rash may be scarlatiniform; but this is a rare variety.

As is seen in both the plates, the rash affects the extremities more than the trunk. It is common for these rashes to come out seven to ten days after the injection of antitoxin; but they may appear as early as the fifth, and as late as the twenty-first day. Often there is some accompanying pyrexia.

ANTRUM, Disease in. (See "Accessory Sinuses of Nose.")

ANUS. (See also "Rectum.") *Herbert W. Allingham, F.R.C.S.*

Under the title "An operation for incontinence of fæces due to relaxed or paralysed sphincter ani," Mayo Robson¹ describes a successful procedure. This is very similar to Lawson Tait's operation for ruptured perinæum, and is not new in its application to rectal surgery. It has been frequently employed by the present writer, and is described and illustrated in his *Diseases of the Rectum*.

Prolapsus Ani in Children.—Karewski has treated 8 cases of long-standing prolapse by injecting a ring of **Paraffin** above the anus. The paraffin must have a melting point of 56–58° C. The patient's bowels are kept open by laxatives for two days before operation, and then on the afternoon of the day before the injection 15–30 grains of **Bismuth** were administered. After disinfection the prolapse was reduced, and one finger kept in the rectum. Using this as a guide, a ring of paraffin was injected

PLATE I.



Photo. J. Neale.

ANTI-TOXIN RASH.

PLATE II.



Photo. J. Neale.

ANTI-TOXIN RASH

around the anus between the skin and mucous membrane, only one needle puncture being made. Bismuth was again administered in such amounts as to prevent defæcation during the next twenty-four hours.²

Fistula in Ano.—Joseph Matthews,³ of Louisville, draws attention to the importance, well recognised by English surgeons, of discovering and attacking every little additional sinus, as well as the main channel, when operating upon fistula in ano. Mr. Matthews, in a clinical lecture, reassures his pupils thus: "You will never be sued for malpractice after operating upon a case of fistula. You do not know why? Suppose a woman were to threaten to bring a suit against you. "Very well, madam," you say, "You will have to come to the court-house and show your scars to the jury"! "

In connection with Karewski's cases, mentioned above, reference may be made to a paper read by Mr. Stephen Paget, before the Clinical Society of London.⁴ Mr. Paget's cases were not those of children but of very old persons. In the discussion that followed, cases were mentioned of death from embolism consequent upon the paraffin treatment. The procedure must still be considered to be in the experimental stage.

REFERENCES.—¹*Pract.* Feb. 1903; ²*Centralb. Chir.* July, 1902; ³*Therap. Gaz.* Sept. 1902; ⁴*Brit. Med. Jour.* March, 1903.

APPENDICITIS.

A. W. Mayo Robson, F.R.C.S.

It is hard to realise that the evolution of the rational treatment of appendicitis has occurred within the last twenty years. The literature of the subject is so extensive that it is quite impossible to even give a summary of the important papers that have appeared during the past year.

In order to avoid immediate surgical treatment, A. J. Ochsner, of Chicago, advocates the arrest of peristalsis in the intestines, which can only be effected by thoroughly emptying the stomach and then withholding all food, and, as far as possible, all drink by the mouth. All food and water must be given by enema, and no cathartics administered. He claims by this method that inflammation can be induced in a large percentage of cases to localize itself, and that if pus forms, it develops as a local abscess, which may even be absorbed. His statistics show a decreasing mortality from 14·6 per cent to 3·4 per cent, and he considers that this treatment, while it cannot supplant operative intervention in acute appendicitis, reduces the mortality by changing the class of cases in which mortality is greatest after

operation, into another class in which the mortality is very small. After the acute stage has passed, all surgeons are now pretty well agreed that an operation in the quiescent period is almost devoid of danger, so that if by Ochsner's treatment we can with tolerable certainty tide over the acute stage of the disease, a great point will have been gained.

On the other hand, Deaver, of Philadelphia,¹ says, it is his conviction that "the only true conservatism in appendicitis lies in recourse to the aseptic scalpel of the surgeon just as soon as the diagnosis is made." Professor Dieulafoy of Paris, believes in operating always, the sooner the better. Though the first twelve hours are the most favourable, he does not hesitate to advise operation after three or four days.

Sir Frederick Treves, in his Cavendish Lecture, gives it as his opinion that immediate operation is demanded at the earliest possible moment in all ultra-acute cases, or in which there is reasonable suspicion that suppuration has taken place, but in cases outside these he thinks the question of operation may be kept in abeyance for the first few days of the attack. He recommends removal of the appendix during the quiescent period, which is attended with very trifling risk, not more than 1 in 500.

I have little doubt that if every case of appendicitis was operated on by a competent surgeon within twelve or twenty-four hours of the attack, the mortality would be extremely slight. Unfortunately, many of these cases are not seen by a surgeon until the initial stage has passed. It is therefore impossible to dogmatise, and each case must be treated on its merits. In the ultra-acute cases it is quite clear that early operation gives the only chance, and I am decidedly in favour of operating wherever there is the least suspicion of suppuration, just as I feel that there is greater safety in operating immediately in any case with a very acute onset, if seen sufficiently early. I look on the operation in the quiescent period as being attended with infinitely less danger than is involved in waiting for another attack, for in my own experience in a very large number of cases I have never seen a death to occur after operation undertaken in the quiescent stage.

Although statistics show that appendicitis is uncommon under the age of five years, yet Griffith presents² a list of 15 cases in children of two years or less, one being in a girl of three months, another in a boy of six weeks of age: and Porak and Durante³ report a case fatal in a new-born child.

In the diagnosis of abscess, blood-count is of considerable importance. Curschmann⁴ has found in 60 cases of appendicitis that the number of white corpuscles in the blood is a reliable indicator of the presence of pus. The physiological number of leucocytes in a c.mm. is from 8,000 to 10,000; if the exudation is serous, this number is increased but little, if at all. If, however, there is a tendency to suppuration, or an abscess is already present, the number of leucocytes in the c.mm. rises to 20,000 or even 25,000. This leucocytosis is a certain indication of suppuration, and is a more reliable guide than palpation or the state of the pulse and temperature. As the amount of pus increases, the leucocytes become correspondingly numerous; after the pus is evacuated, whether by operation or rupture into the intestine, they rapidly sink to normal. If after operation leucocytosis does not diminish, it may be assumed that drainage is defective.

Parasites as a cause of Appendicitis.—Von Motty⁵ states that he has found the presence of oxyuris and some other parasite in appendicitis so frequent that he thinks it can hardly be regarded as accidental. He further states that ascarides seem to be associated with gangrenous inflammation, while the trichocephalus and the oxyuris lead to chronic appendicitis.

Appendicular Actinomycosis.—Although this condition is relatively so rare, Honglais was able to collect 120 cases in the thesis which he published on this subject in 1897. Since that time nearly thirty others have been recorded. M. Poncet recorded a case, and Dr. Leon Thevenot (University of Lyons) has recorded another, in which the patient was cured by a curetting operation followed by **Iodine** treatment.

Primary Carcinoma of the Vermiform Appendix.—Routine microscopical examination of all appendices removed will doubtless in the future show that carcinoma in the appendix occurs more often than has hitherto been thought. D. S. D. Jessup⁶ has collected 13 undoubted cases in which the appendix was the starting point of carcinoma, and I have had another under my care, which makes the fourteenth, but this list does not include the 79 cases collected by Kelly, in which both the appendix and the cæcum were involved, as there was no positive evidence to show that the growth originated in the appendix. The type of growth in all cases was adeno-carcinoma, two of the patients were under 20 years of age and four under seven; in seven there was a history of appendicitis. The situation of the tumour was in eight instances at the apex.

Chronic Appendicitis and movable right Kidney.—The frequent association of appendicitis with movable right kidney was first pointed out by Edebohls in 1894, the explanation of this being that the kidney compresses the superior mesenteric vessels between the head of the pancreas and the spine, thus interfering with the circulation in the appendix. Dr. Manton⁷ pointed out: (1) That in obscure abdominal conditions a diagnosis should not be attempted until movable kidney and chronic appendicitis could be excluded by careful abdominal palpation; (2) that when movable kidney and appendicitis were present, operations upon the pelvic viscera would not be followed by cure unless the appendix and kidney condition were remedied.

I have recently had several cases in which pain and distress on the right side of the abdomen have been associated with movable kidney and appendicitis, which have been cured either by the removal of the appendix and fixation of the kidney at the same operation, or where the kidney has not been excessively movable, by removal of the appendix alone. In one case recently operated on I found a long appendix adherent by its tip to the top of a very movable kidney. The patient has completely lost her pains since the operation.

REFERENCES.—¹*New York Med. Jour.*, Dec. 7, 1901; ²*Univ. o; Penns. Med. Bull.*, Oct., 1901; ³*Brit. Med. Jour.*, May 23, 1903; ⁴*Wein. klin. Woch.*, Dec. 26, 1901; *Brit. Med. Jour.*, May 31, 1902; ⁵*Echo Méd. du Nord.*, 1902, p. 217; ⁶*Med. Rec.*, Aug. 23, 1902; ⁷*Ibid* Nov. 29, 1902.

ARTERIES, (Suture of). (See also "Veins.")

Priestley Leech, M.D., F.R.C.S.

Many experiments have been performed showing the feasibility of suturing wounds in both arteries and veins. Silvia¹ carried out a series of experiments on dogs, donkeys, and sheep, resecting their arteries and removing the portion operated on for examination from five to thirty-five days later. He found the lesions varied greatly according to their situation, and the absorption of the silk sutures occurred through the agency of giant cells. Operations in small animals were less satisfactory than in large, because of the difficulty of keeping the lumen pervious. In large animals the results were perfect, all the tissues except the elastic fibres having shown complete restoration.

Schmitz² has a good article on this subject, reviewing the work from Hallewel, who in 1759 recorded a case of suture of the brachial artery, to Silvia in 1902. The evidence all goes to

show that the finest of needles and silk or catgut must be used, with as perfect asepsis as possible. The invagination methods of Murphy and of Payr are both feasible.

Opinions are divided as to whether the intima should be included in the suture. Delbet³ thinks the intima should not be included, as it may lead to formation of a clot. Dörfler⁴ proved experimentally that the sutures might be safely passed through all the coats of the artery; this is an advantage in being easier to perform, especially in thin-walled vessels, and the sutures have a firmer hold. When the wound involves more than half the circumference of the vessel, or if the edges of the arterial wound are much bruised or lacerated, Murphy's **Invagination** method should be done, and in the latter case the portion of bruised artery, if not too extensive, should be excised. Padded forceps carefully applied are better than a temporary ligature for controlling the blood current during operation, as the endothelial layer of the artery is not so likely to be torn.

Murphy's⁵ method of invagination is done as follows: Two or three sutures with a needle at each end are passed through the proximal portion of the divided artery, including the two outer coats only. The needles are then passed through the entire thickness of the walls of the distal portion of the artery from within outwards, at a distance of one-third to one-half an inch from the place of division. By traction on these sutures the proximal end is invaginated into the distal end, the sutures tied and cut short, and the intussuscepted portion closely united to the sheath by a series of interrupted sutures which take up the two outer coats only of the intussuscepted portion, and perforate the entire wall of the distal sheathing portion.

Matas has applied these principles to the treatment of spontaneous aneurysm (*see* "Aneurysm.")

Ferguson,⁶ of Chicago, reports a case of end to end anastomosis of the popliteal artery for gunshot injury. The popliteal artery was completely severed at the junction of the middle and upper third, except a few shreds of the outer coat next the vein. Strips of gauze were tied around the artery, above and below the injury, for temporary hæmostasis, and the tourniquet removed. The lacerated ends, about an inch altogether, were removed. The upper end of the artery was introduced into the lower, a distance of a quarter of an inch, and held there by four retention sutures of fine silk, and the free edge of the lower end sewn around the upper with a continuous suture of fine silk. The

temporary ligatures of gauze were then removed, and blood allowed to flow into the limb. Pulsation at the ankle was restored at once, and the extreme pallor of the foot disappeared. While restoring the continuity of the artery the leg was flexed at a right angle. Gangrene of a portion of the foot and heel supervened, and the toes with the ends of the metatarsal bones, a broad strip along the sole, and a necrosed patch on the heel, were removed, but as this did not heal well a second amputation at the mediotarsal joint was done. Six months later the man returned, complaining of the cord-like condition of the scar in the popliteal space preventing him straightening his limb. The scar was excised, and Ferguson examined the popliteal artery at the same time, and he felt pulsation of the artery above and below, as well as at the seat of the anastomosis.

REFERENCES.—¹*Gior. Inter. d. Sci. Med.* July 31, 1902; ²*Deut. Zeits. f. Chir.* Bd. 66, Hft. 3 and 4; ³*Bull. e. Mém. de la Soc. de Chir. de Paris*, No. 12, 1903, *Brit. Med. Jour.* May 2, 1903; ⁴*Beitr. z. klin. Chir.* Bd. xxv; Hft. 3; ⁵*Med. Rec.* Jan. 16, 1897; ⁶*Ann. Surg.* May, 1903.

ARTERIO-SCLEROSIS.

Prof. A. H. Carter, M.D., F.R.C.P.

Arterio-sclerosis and Mental Disease.—Dr. Adolf Meyer¹ believes that the frequency of mental disease attributable to disease of the kidney is ordinarily exaggerated. Arterio-sclerosis of the heart and aorta was exceedingly frequent in the insane, but it is not often that mental disorders can be directly ascribed to these affections. This can only be done in cases of arterio-sclerosis of the brain itself, and even here many difficulties are encountered. Arterio-sclerosis of the brain is often associated with loss of memory of the immediate past, and transitory delirium or mental confusion. Sometimes these persons are guilty of setting fire to houses, stealing, or sexual misconduct. Mental disease, occurring at that period of life in which arterio-sclerosis is most common, shows no difference in its nature and course that cannot be fairly accounted for by the diminished resistance of later life. In short, there is no justification for speaking of arterio-sclerotic insanity, though it is possible to recognize clinically senile and pre-senile involution. Naturally enough, then, there is no special treatment for cases in which the underlying condition is arterio-sclerosis. The knowledge of the existence of this element in a case is chiefly of value in prognosis.

Attention has been called by Dr. Bucco² to a rhythmical vibration of the head which often accompanies arterio-sclerosis. The vibrations are synchronous with cardiac pulsation, antero-

posterior in direction, with possibly a slight lateral motion as well. Experiments showed that a rise of arterial pressure alone did not produce these vibrations.

TREATMENT.—Sir Lauder Brunton³ advises the following prescription for persistent high blood-pressure associated with arterial degeneration :—

R Potass. bicarb.	gr. xxviii	Sodii nitritis	gr. ivss.
Potass. nitrat.	gr. xviii		

To be taken in the morning, dissolved in a tumblerful of water.

The two salts stimulate the kidneys, and in this way help to get rid of those harmful substances which act directly upon the arterial wall, and cause constriction.

Trunecek⁴ advocates the subcutaneous injection of a compound **Saline Solution** (which he calls “inorganic serum”) for the relief of obstinate symptoms occurring with arterio-sclerosis. Its composition is as follows :—

R Sodii sulphate	14 grms	Sodii carb.	21 grms
Sodii chloride	4·9 grms	Potass. sulphate	40 g ms
Sodii phosphate	15 grms	Aq. distillat.	ad. 100 grms

He generally starts by a dose of 1 c.c., then he repeats the injections every four or seven days, increasing on each occasion the quantity of serum by about c.c. 0·20, and when he intends to inject more than 1 c.c., he makes several small injections to avoid too great a distension of the skin: he first of all injects c.c. 0·5, then, leaving the needle in position, he waits several minutes before repeating the injection. When the dyspnœa is particularly distressing he does not hesitate, in order to afford relief, to repeat the injection every day. Up to the present the largest quantity injected at any one time is 75 c.c. Usually it is unnecessary to exceed 5 c.c. Even these large doses are well borne. The painful swelling which follows the injection soon disappears, and in no case did any abscess or acute inflammatory phenomena follow.

This treatment specially acts on the dyspnœa, which is sometimes calmed by the injection of mineral serum, even more so than by the subcutaneous injection of morphine; as a rule the cardiac asthma is also improved, sleep and appetite return, and the general condition improves. In regard to the symptoms of arterio-sclerosis, it is true that they appear to retrogress in certain cases, but we must not measure the success of the treatment by its effects in this direction, but rather by the changes brought about in the general condition. It appears to be

specially indicated in persons suffering from arterio-sclerosis whose blood is impoverished in alkaline salts. This does not signify that the alkalinity of the blood is reduced ; as a matter of fact the proportion of chloride of sodium may be greatly below normal without any change in the reaction of litmus paper, as evidenced by hyperacidity of the urine. On the other hand, a neutral or alkaline reaction of the urine—which is rarely observed in persons suffering from arterio-sclerosis—constitutes a contra-indication of the use of the inorganic serum. Thus the degree of urinary acidity—as well as the desquamation of the integument—will be the chief signs on which we must rely, to commence, suspend, or recommence the treatment.

REFERENCES.—¹*Med. Rec.* Jan. 31, 1903 ; ²*New York Med. Jour.* April 14, 1903 ; ³*Deut. Med. Woch.* April 17, 1902 ; ⁴*Med. Press,* Nov. 26, 1902.

ARTHRITIS.

Priestley Leech, M.D., F.R.C.S.

Howard Marsh¹ gave the Bradshaw lecture for 1902 on infective arthritis. There is similarity of structure, and also with regard to liability to infection, between the peritoneum and joints. The general statement may be made that in the great majority of specific diseases the joints are liable to infection. In compiling a list of these infections, there are tubercle, syphilis, septicæmia, gonorrhœa, pneumococcal infection, typhoid fever, influenza, dysentery, erysipelas, glanders, and the doubtful one of acute rheumatism.

Pneumococcic Arthritis may in rare cases precede by several days the onset of the pneumonia, but in most cases the arthritis is developed in from two to fifteen days after the commencement of the pneumonia. In 31 cases in Dr. Cave's table, in no fewer than 27 suppuration occurred, and 23 terminated fatally. This high mortality is due to the fact that the pneumococcus produces a general systemic infection, an acute and profound septicæmia, of which the arthritis is simply a local manifestation.

Typhoid Arthritis.—Keen says there are three forms of joint disease met with in association with typhoid fever. (1) Rheumatic typhoid arthritis ; (2) Typhoid arthritis proper ; (3) A form of septic arthritis.

(1.) Rheumatic typhoid arthritis includes cases where at the commencement of the illness (sometimes it is the earliest symptom), the patient complains of pains in the knees, elbows, or other joints, which are the seat of varying degrees of swelling. It usually disappears ; sometimes suppuration occurs.

(2,) Typhoid arthritis proper. This is met with during the acute stage of the fever or towards its decline. There is a poly-articular and a mono-articular form. There is pain with more or less swelling, due partly to infiltration and thickening of the synovial membrane, and partly to effusion of turbid fluid in the joint. The inflammation may subside and recovery ensue; fibrous ankylosis may take place, which may or may not yield to repeated manipulation under an anæsthetic and prolonged passive movement and massage; or finally, suppuration may occur, necessitating free incision and drainage. In the mono-articular form it is the hip in the great majority of cases which is involved, and the results are as a rule serious; in some, fibrous ankylosis occurs, while in others, and more frequently, the capsule becomes distended with serous effusion, and then either spontaneously or when the patient is lifted, dorsal dislocation occurs. The pathology of this form is not well worked out, but it appears as if the arthritis were due to the local action of the bacillus.

(3,) Septic arthritis. This is generally fatal, but presents no specific characters; it is due to infection from boils, bedsores, or from the surface of intestinal ulcers by streptococci or staphylococci, or possibly the bacillus coli communis may be present in some cases.

Arthritis in *scarlet fever* presents itself under two forms. The first form, indistinguishable clinically from acute rheumatism, as a rule soon subsides. The second form is much more severe, and not rarely ends in suppuration; it is usually a part of a secondary sepsis or a general pyæmia, as evinced by such other lesions as empyema, subcutaneous abscesses, etc., the infective agent being streptococcus or staphylococcus.

Influenzal Arthritis.—Marsh has seen two cases of arthritis of the hip which were due to this, and in both some stiffness resulted.

Erysipelas and Arthritis.—Dr. René Jorrot published a thesis on this in 1899. The arthritis may be : (a) Transitory, attended with serous effusion and involving many joints, and sometimes the sheaths of tendons; (b) A plastic form tending towards fibrous ankylosis; this form may persist over many weeks; (c) An acute suppurative arthritis, by which the joints are rapidly disorganised.

Pathologically the joint changes may be divided into four groups.

In the first group the changes are slight, transient, and result

from synovitis with infiltration of the sub-synovial tissue, and with some but only a limited amount of serous effusion into the joint cavity. Examples, the arthritis occurring in the early stage of scarlet fever and typhoid fever.

In a second group there is more effusion into the joint cavity, which, at first merely turbid, may become purulent.

In a third group the inflammatory process chiefly involves the peri-articular tissues, and leads to considerable brawny or boggy swelling and to reddening of the skin, which at the same time is so stretched and shiny as to suggest the presence of suppuration. This is one of the most clearly marked types of infective arthritis, and one with which we have been long familiar in some cases of gonococcal infection. There is frequently no effusion into the joint, and however imminent it may seem, suppuration rarely occurs. Clinically these cases run a very prolonged and tedious course, extending over several weeks and even months. They have a strong tendency to end in fibrous ankylosis, which may end in complete synostosis.

The fourth group includes the cases in which from the first the arthritis is acute and destructive. Suppuration takes place early and goes rapidly on to complete disorganization of the joint, and often to wide burrowing of pus which has escaped from the synovial cavity, along the intermuscular planes of the limbs. This fourth variety is met with in its most marked phase in pneumococcus arthritis.

Other forms of arthritis, which have been looked upon as obscure cases of rheumatism, may prove to be due to some form of infection. The influence of injury of whatever kind in predisposing joints to attack by the pneumococcus and other micro-organisms, should be carefully kept in view. Cases of arthritis have been recorded in ophthalmia neonatorum, in persons with bronchiectatic cavities, and other cases where there have been septic foci due to one or other micro-organism.

TREATMENT.—The cases in the first group generally subside.

In the second group, in which the joint cavities contain fluid, the treatment is that of gonococcal infection, viz., **Removal of the Fluid** and free **Irrigation** of the joint with 1-100 carbolic or 1-1000 mercurial solution, preferably the biniodide. To evacuate the fluid a full-sized trocar and canula may be used, and irrigation can readily be performed through the canula, or the joint may be opened by an incision at the side of the patella. If the fluid is already purulent the joint must be freely opened, and the

finger must be inserted to break down any adhesions which may be present and behind which pus might be imprisoned, and then thorough and copious irrigation must be practised.

In the third or plastic form the prognosis is distinctly unfavourable. No treatment seems to prevent the tendency to ankylosis. At first **Rest**, with warm boric or opiate **Fomentations**; later, **Blisters**, when the swelling and heat have subsided; and later, **Massage**. Manipulation to restore movement may be used in the slighter cases, but in the more severe is best left alone, as the pain and sensitiveness of the joint may become much worse, so that rest will have again to be resorted to and ankylosis again take place.

H. L. Barnard² read a paper at the Clinical Society of London on the treatment of suppurative arthritis. He pointed out that few cavities were so difficult to drain as the knee joint. The anatomy of the knee joint showed two capacious pouches behind, which reached above the condyles posteriorly where they were covered by the heads of the gastrocnemius, and were separated from each other by a complete septum formed by the crucial and other ligaments. The external pouch sent a bursal extension down the leg along the popliteal tendon. When the knee-joint was extended, these two pouches were shut off from the joint by the light coaptation of the femur and tibia. When distended with pus the pouches ruptured into the depths of the popliteal space, where the sepsis was liable to invade the vein, and the abscess tracked down the calf and up the thigh, making it impossible to drain it. These pouches should be freely opened up by two inch incisions in the line of the leg, made by cutting on the condyles where they could be felt projecting on either side of the popliteal space when the leg was fully extended. In order not to wound any nerves, a blunt instrument is used to scrape down to the capsule after the skin is divided; the capsule should be divided freely. The knee is then flexed to relax the structures, and tubes are inserted on each side. In eight out of nine cases which were treated in this way, the temperature fell to normal in from thirty-six hours to a week. **Massage** downward in front, and upward behind, greatly assisted the evacuation of pus from the deep pockets. This method of posterior drainage would cope most successfully with the immediate dangers of sepsis; the final result as regards movement, etc., depended on the cause of the suppuration. Subacute cases of suppurative arthritis of the knee joint due to auto-infection should be treated

by the usual lateral patellar incisions and **Irrigation**. If the temperature remain above normal, the posterior pouches should be opened later. All acute cases, especially if due to punctured wounds, should be laid open freely at once, both in front and behind.

In the discussion which followed, Mr. Clutton and Mr. Marmaduke Sheild had treated acute gonorrhœal cases successfully by incision of the joint, washing it well out, and sewing up the wound. Mr. Barnard recommends **Massage** and **Passive Movement** as soon as the temperature is normal, the patella being moved from side to side to prevent its becoming adherent to the condyles.

Mr. Walter Whitehead³ reports a case of acute suppurative arthritis which was treated by direct transverse incision of the joint, and packing the cavity with gauze. The patient recovered with a stiff but useful leg.

Five cases of purulent pneumococcic arthritis in children which were under the care of Messrs. Dunn and Betham Robinson and Dr. Morley Fletcher⁴ are reported. Out of the five cases three died ; in four of the cases the patients were infants, being five months, six months, fourteen months, and one year and nine months old respectively, the fifth child being six years old. The disease presents some peculiarities which are worth bearing in mind, and the symptoms stand out in sharp contrast with cases of arthritis due to the staphylococcus aureus, streptococcus, etc. Except in the severest cases the constitutional symptoms do not keep pace with the extent of the local lesion, and a baby whose knee joint is distended with pus may sleep and eat well, a condition inconceivable in the case of staphylococcal or streptococcal infections of so large a joint. The fever is irregular and moderate, while the appetite survives and prevents extreme emaciation. In a typical case the character of the local lesion is almost distinctive, the most striking feature being the nearly complete absence of circumarticular inflammation, though the pain, tenderness, and distension of the joint all point to an acute inflammatory process. In none of the five cases was there any brawny swelling or œdema worth mentioning. There is in most cases an intense pallor, comparable to that occurring in long-standing cases of empyema in children, which condition is nearly always pneumococcal in origin. The varieties in the character of the pus from such joints are of interest, and probably of prognostic value. In cases of moderate severity it is fairly thick, yellow, but with a distinct shade of green, odourless, and very

prone to fibrin formation and deposit of lymph, similar in fact in every way to the common type of pus from the empyemata in children. In other cases the pus may be deeply blood-stained ; or thin and to the naked eye resembling turbid serum, though microscopically loaded with pus cells, and they believe this thin pus to be of ominous import, as both patients died, and in acute empyemata with pus of this character the patients commonly die. In another case a gelatinous membrane consisting of fibrin and pus cells enclosed a clear fluid. In all five cases a complete bacteriological examination was made. In no case was there any history of previous trauma to a joint, nor was there any inflammation of any of the serous sacs or important viscera, but one case yielded a pure culture of pneumococcus from the heart's blood, and in the other two fatal cases there was no *post-mortem*, or the pneumococcus might have been cultivated from the blood in the same way. As regards the primary focus of infection, it may be remarked that one patient had suffered from an attack of bronchitis previously to the joint affection, a second from an attack of otorrhœa, and a third from pneumonia.

Netter, quoted by Muir and Ritchie, says out of 46 cases of pneumococcic infection in children, otitis media was the primary lesion in 29, broncho-pneumonia in 12, meningitis in 2, pneumonia in 1, pericarditis in 1, and pleurisy in 1. No case of primary arthritis enters his list. They think the pneumococcus plays an important part in children, as is shown by the fact that during the last six months 15 cases of pleuritic effusion have supplied fluid for bacteriological examination at the East London Hospital ; in 11 the pneumococcus was in pure culture, in 2 the culture was sterile, and 2 gave a growth of staphylococcus albus.

During the same period the pneumococcus was obtained from two cases of suppurative pericarditis, four cases of meningitis, and two of peritonitis. In many of these cases it is impossible to be certain of the primary lesion, but probability inclines to the middle ear. The treatment was incision and drainage ; the treatment of local condition was fairly satisfactory and free from complication, and the deaths seem to have been due to a pneumococcic septicæmia. (The notes and remarks in these five cases are by Mr. Leonard Dudgeon and Dr. W. P. S. Branson.)

In this connection a paper by Dr. O'Connor of Buenos Ayres⁵ is very interesting. Some years ago he drew attention⁶ to the surgical treatment of cases of rheumatic fever which had proved rebellious to medical treatment. He believes rheumatic fever

to be an infective disease similar to gonorrhœal arthritis, and he has used incisions and drainage into the joint to remove the infective material. This treatment is of no use in the dry variety of the disease, and unless every care be taken with regard to sepsis, the remedy may be worse than the disease. He opens the joint, ligates all bleeding points, and drains. In the knee joint an incision an inch long is made on either side of the joint through the capsule; a long, closed forceps is passed through the incision and a drainage tube pulled through, leaving about half an inch projecting on either side. The joint is washed out every morning with a jugful of warm carbolic lotion (1 in 60), and the tube is generally dispensed with on the third or fourth day; irrigation is continued daily, until healing no longer permits of the passage of fluid. In the wrist and ankle joints drainage is attained by a piece of gauze. He gives notes of twenty cases thus treated.

REFERENCES.—¹*Brit. Med. Jour.* Dec. 13, 1902; ²*Ibid.* Feb. 21, 1903, and *Lancet*, April 25, 1903; ³*Brit. Med. Jour.* July 21, 1902; ⁴*Lancet*, Aug. 1, 1903; ⁵*Ibid.* Jan. 24, 1903; ⁶*Glasgow Med. Jour.* Oct. 1897.

ASCITES.

A. W. Mayo Robson, F.R.C.S.

Operation for Ascites.—The method of fixing the omentum to the abdominal wall in cases of ascites is one which promises to be of benefit. This operation seems to be of particular value in cases of cirrhosis of the liver, the object being to set up adhesions in which new vascular communications will form, and thus establish a supplementary circulation. The method has also been tried in cases of tuberculous ascites. Leport¹ has collected a series of 53 cases, almost all of which were due to cirrhosis. 20 were completely cured; 11 considerably improved, and 22 showed slight improvement or a fatal result. Where other methods of dealing with cirrhotic ascites have failed it should not be postponed too long, for when the hepatic functions are considerably impaired, the chances of improvement are less. Dr. Greenough of Boston collected the results in 115 cases, of which 29·5 per cent died; 40 per cent were improved; and 31·5 per cent were not improved.

Planer² had under his care in March, 1902, a woman aged thirty-one, who had undergone paracentesis for ascites several times.

According to Dr. Bunge,³ the indications for operation are those diseases which lead to portal obstruction: (1) Thrombosis

of the portal vein or constriction by inflammatory products or tumours; (2) atrophic cirrhosis; (3) cardiac cirrhosis; (4) pericarditic pseudohepatic cirrhosis (Pick); (5) possibly zuckergussleber.

The dangers of the operation are :—

(1,) The danger of intestinal obstruction due to the omental fixation. This appears to be very slight.

(2,) The danger of hernia when the fixation is extra-peritoneal.

(3,) The short-circuiting of the liver. A number of patients presented symptoms which disappeared under a carbohydrate diet. The question of diet deserves study.

Contra-indications are : Great disturbance of hepatic function, especially icterus, acholia and hypocholia of the fæces, as well as grave cardiac and renal complications.

Conclusions :—

(1,) In cases of portal obstruction, Talma's operation has given about 40 per cent of symptomatic cures.

(2,) The chief benefit derived from the operation is the removal of the ascites, but gastro-intestinal hæmorrhage of portal origin constitutes an indication for the operation.

(3,) The operation of choice is omental fixation, yet spleno-fixation has its use.

(4,) Grave liver disturbance is a contra-indication. Diminution of the excretion of urea, and alimentary glycosuria or levulosuria, cannot be considered contra-indications.

(5,) When delirium develops, or other symptoms of the liver being markedly shut out from the circulation, the diet must be regulated.

Tansin⁴ has proved it possible to unite the portal vein directly into the vena cava, and of the animals operated on 70 per cent lived. He proposes this operation to replace the indirect and incomplete operation of omental fixation.

Ascites due to Compression of the Portal Vein.—Müller⁵ reports a case of ascites apparently due to inflammatory obstruction of the portal vein, probably secondary to gastric ulcer, cured by detaching adhesions and freeing the vein. No other cause could be found for the ascites, and the liver was normal.

REFERENCES.—¹*Thèse de Paris*, 1902; ²*Der. Frauenarzt*, Feb. 20, 1903; *Brit. Med. Jour.*, April 4, 1903; ³*Verhandl. der Deut. Gesells. f. Chir.* 1902; *Centralb. f. Chir.* No. 26, 1902; ⁴*Centr. f. Chir.*, No. 36, 1902; ⁵*Arch. f. klin. Chir.*, Bd. 66.

ASTHMA. *Wilfred Jas. Hadley, M.D., F.R.C.P., F.R.C.S.*

PATHOLOGY.—Brodie and Dixon¹ have shown that asthma is due to spasm of the muscular walls of the small bronchioles. Experiments as to the innervation of the muscles showed that the fibres both for contraction and dilatation ran in the vagus. Contraction could be caused, in some cases, by exciting the sciatic nerve, more frequently by exciting the central end of the divided vagus; but the best effects were produced by stimulating the nasal mucous membrane, high up and well back on the septum. Irritation of the nerve endings could be entirely annulled by **Atropine**, but, in an acute attack, it was doubtful if it would be safe to administer a large enough dose to entirely remove the spasm. **Lobelia** produced a transitory dilatation of the spasm, but it returned in one to two minutes. If the spasms were produced by nasal irritation, local treatment of the nose with **Cocaine** was immediately successful in checking it. Possibly "blocking" the vagus by a constant current through the neck (so that conductivity was, for the time, prevented) might be successful. Brodie regards the spasm of uræmic asthma as due to asphyxia of the respiratory centre in the medulla, and says that section of the vagus would prevent it.

TREATMENT.—Successes have been reported from the use of **Atropine** hypodermically. Bass, of Philadelphia, reports that he has cured cases by injecting 5 drops of a 2½ per cent solution of **Nitrate of Silver** into the neck over the vagus. Out of five cases, two were permanently relieved, another for a time, and two temporarily whilst under treatment.

Considerable difference of opinion exists as to the results of the treatment by **Cauterization of the Septum**, which was so strongly advocated by Dr. Francis of Brisbane last year.¹ The balance of opinion would be that if the spasm is relieved by the application of cocaine to the nose, then the patient can be advised that cauterization will probably have beneficial results. It is thought, however, that without general treatment relapses will occur, whilst any wholesale use of the treatment as a panacea for all and every case of asthma is deprecated.

REFERENCES.—¹*Lancet*, Oct. 18, 1902; *Jour. Laryng.*, March, 1903.

BANTI'S DISEASE. (See "Splenic Anæmia.")

BASEDOW'S DISEASE. (See "Goitre, Exophthalmic.")

BERI-BERI.*James Cantlie, M.B., F.R.C.S.,*

The etiology of beri-beri has not been ascertained. The bacterium, if there is one, has yet to be discovered, and we are looking forward with great interest and expectation to the work being carried on at Kuala Lumpur in the Malay States by Dr. C. W. Daniels and his colleagues.

Waterhouse¹ considers that diet has little to do with the propagation of the malady, but that infection by personal contact and by place infection is probable. He found that in a prison with 100 inmates beri-beri was unknown until two cases of beri-beri were imported, and after that the disease made a steady increase. He also noticed that the disease occurred amongst persons dwelling in one set of quarters, and that the number decreased after scrubbing the floor with a 4 per cent solution of chloride of lime. The buildings in which Waterhouse observed the disease were neither old nor damp; there were no flies or mosquitoes present. Prisoners sleeping next a case of beri-beri were very likely to develop the disease; and the fact that those who occupied unfloored tents and walked about with bare feet were prone to contract beri-beri, would seem to point to the possibility of place infection occurring from the ground.

Uchermann completely refutes the belief that rice is the only channel by which the disease is conveyed, by a statement that beri-beri had appeared on ships where rice had neither been used nor had been on board at all. He is of opinion that beri-beri is a multiple neuritis due to a toxin conveyed by tainted vegetable or animal food. The tainted vegetable form of the disease was probably due to tainted rice, the animal form to tainted tinned food. The "spontaneous" origin of beri-beri on board ships, especially sailing ships on long voyages, is held by Uchermann to be possible, and he cites instances of the development of beri-beri on sailing ships: the disease in some instances did not appear on board the vessel until 120 days after leaving the last port.

Schuttelaure² describes two epidemics of beri-beri at Diego-Suarez. In one of them he found the disease disappeared by increasing the quantity of fat in the diet, and in the second epidemic when fresh bread and fresh non-decorticated rice supplanted rice deteriorated by age, the disease was arrested. These and other observations seem to imply that when from any reason the health of men living in communities deteriorates, beri-beri speedily disappears with a change to fresh, wholesome diet.

Stanley³ states that of four prisons in Shanghai the one in which beri-beri mostly prevailed was that in which the long-sentence prisoners were detained. He excludes soil and place infection as a cause of beri-beri, but favours the idea of its propagation by contagion. The evidence that a poor quality of rice played a direct part in the etiology of the disease is, according to Stanley, negative.

In Bangkok, where fresh rice is plentiful, Nightingale⁴ states that beri-beri is a rare disease. Amongst the Tamils in the Straits Settlements beri-beri is very uncommon, it being their custom to decorticate their rice only after it is cooked; whereas amongst the Chinese and Malays beri-beri is rife, and they eat rice which has been husked a year or longer.

The PROPHYLAXIS of beri-beri is summarized by Uchermann as follows: (1) A restriction in the use of tinned food; (2) That fat should form a part of the diet; (3) That potatoes and fresh vegetables should be provided for the whole voyage, ships being provided with a better system of preserving these articles; (4) That fresh fruit and fresh provisions should be used during the stay in port; (5) That on long voyages the quantity of sugar and dried fruit should be increased; and (6) The use of a water filter (Chamberland-Pasteur) should be enjoined. In addition care should be taken as to quality, purchase, preservation, and final packing of the provisions (the food being inspected once a fortnight), and directions be given as to how to act should beri-beri, scurvy, or similar food diseases appear at sea (the nearest port to be sought). Finally, lime juice was enjoined on voyages south of 33° N. if the potatoes should run short.

Christopherson⁵ believes that rice paralysis is distinct from beri-beri, and produced by a distinct toxin. The clinical points of difference are: In rice paralysis the motor, rather than the sensory, fibres are affected; the vaso-motor system is not so much involved; the heart and vagi are unaffected; it does not appear in epidemics, and it is much less fatal.

TREATMENT.—McLosky concludes,⁶ from the observation of 38 cases of beri-beri treated with arsenic, that the drug has no curative effect, and that the disease is not due to any form of arsenical poisoning.

Laoh⁷ does not believe in the toxicity of rice in beri-beri, but considers sameness of diet a predisposing cause. He finds the beans or peas of *phaseolus radiatus* an excellent substitute for rice. The treatment by drugs of a specific nature has not

been justified by any observer; but alteration or improvement in **Diet** seems in every instance to have been followed by improvement. A change of residence, especially to a region at a higher level, no doubt constitutes a valuable adjunct to a change of diet. It is therefore possible that beri-beri may be a variety of that complex ailment, *scurvy*. If it occurs spontaneously in vessels that are a long time at sea, the question of a scorbutic origin of the disease would seem to be borne out.

REFERENCES.—¹*Army Med. Rec.* Dec. 20, 1902; ²*Arch. für Schiffs Med. Trop. Hyg.* July, 1902; ³*Jour. of Hyg.* July 1, 1902; ⁴*Brit. Med. Jour.* Sept. 20, 1902; ⁵*Jour. Trop. Med.* May 15, 1903; ⁶*Ibid*, May 1, 1903; ⁷*Ibid*, Sept. 1, 1903.

BLADDER, (Surgery of).

E. Hurry Fenwick, F.R.C.S.

Sterilisation of Catheters.—C. B. Nancrede and W. H. Hutchings¹ reprint the conclusions reached after the first set of experiments they made, in which old laboratory cultures were used as the infecting media, and add notes on 95 new experiments in which the catheters were infected by being used on actual cases. Their latest conclusions are as follows:—

(1.) Previous washing with warm soap and water is not essential when heat is employed. It simply reduces the time required.

(2.) One of the chief obstacles to the sterilisation of catheters is the oily lubricant so generally used.

(3.) The English catheter is more easily sterilised than the soft rubber, and is not damaged by boiling if proper precautions are taken.

(4.) English web catheters should preferably be boiled in a saturated solution of **Ammonium Sulphate**, and subsequently washed in sterile water.

(5.) The only precaution that must be observed in boiling English catheters is to keep them from coming in contact with the bottom of the vessel in which they are boiled.

(6.) Finally (a) all catheters, except the soft French ones, can be sterilised by boiling, provided all air is expelled from their interior; (b) although five minutes' immersion in actually boiling water is usually sufficient, yet not less than ten minutes should be employed, especially in the case of instruments of small calibre; (c) previous cleaning in soap and water, though not essential, is most desirable and also reduces the time required.

F. J. Cotton² has experimented with ammoniac sulphate and concentrated salt solutions for the purpose of sterilising "gum

elastic" catheters and bougies. As a result of these tests he claims that all such instruments may be boiled repeatedly and for long periods in saturated (or something less than saturated) solutions of ammoniac sulphate or sodic chloride without essential damage.

Adrenalin in Vesico-Urethral practice.—A. von Frisch asserts that advantageous use can be made of the blanching or hæmostatic action of **Adrenalin** when performing operations on the urethra and bladder. In an article in the *Wien. Klin. Woch.*³ he describes the manner in which he used the preparation in several cases, in which it rendered good service, and so stimulated him to further experiments in the same direction. It is sometimes desirable to make a cystoscopic examination in cases of vesical hæmaturia, in which the preliminary irrigations always cause a renewal of the hæmorrhage, and in which a clear idea of the conditions is sometimes obtainable for a brief moment only with the aid of the irrigation cystoscope. In such cases he has filled the bladder with 3 to 5 oz. of a solution of adrenalin, 1-10,000, leaving the liquid three to four minutes in the bladder, and only then beginning the irrigations. By taking this precaution he avoided all hæmorrhage, or else it was so slight that the clearing up of the contents of the bladder was readily effected, and the cystoscopic examination could be executed with perfect success.

In operating on *tumours* of the bladder, and in performing suprapubic cystotomy after opening the bladder, he makes several applications of the adrenalin solution, 1-1000, to the tumours and their immediate neighbourhood, using a cotton pledget for the purpose. This suffices perfectly to render possible the extirpation of the tumour in the blanched tissue, almost without any loss of blood whatever. In this way the thorough removal of the bases of the tumours is assured, and there is no danger of leaving behind, when dealing with multiple papillomata, a little of the minute new formations, since the field of operation remains almost completely dry and free from blood. In very narrow *strictures* which are difficult to enter, the application of a few drops of adrenalin, 1-1000, at the entrance to the stricture suffices so to reduce the swelling of the mucosa as to materially facilitate the introduction of the sound. In *difficult catheterism* of hypertrophied prostates, a preliminary instillation of 15 to 30 m adrenalin, 1-1000, into the prostatic urethra is of great advantage. The introduction of the catheter

is more readily performed, and usually without bleeding, even when the prostate gland is congested. In the same fashion we have heretofore made the most of instillations of **Cocaine** in strictures and hypertrophy of the prostate. This drug also produces a transient anæmia or blanching, and reduces the swelling of the mucosa : but adrenalin works far more promptly.

Finally, he used the drug in three cases of acute and complete *retention of urine* due to hypertrophied prostate. Each time he was confronted with an initial complete prostatic retention in the first stage. The retention of urine had been in all the cases so complete for days or weeks that the patient had been unable to void a single drop spontaneously. After instilling 30 minims of adrenalin, 1-1000, into the prostatic urethra, he waited three to four minutes, and then requested the patient to try to empty the bladder. The result was of course very imperfect, but the patients were able to void a small quantity of urine, at least drop by drop, immediately after the application of the adrenalin. In such cases there is no depreciating the *moral* effect of a result, be it ever so slight, following immediately on the surgeon's intervention, the patient, usually much depressed over his condition, being thus given hope that spontaneous urination is among the possibilities ; but in Frisch's cases the first painfully-voided drops of urine were followed by a fairly quick return of the normal function, very much after the manner in which the same result may be observed when Bottini's operation is successfully performed. The adrenalin instillations were continued for several days. The quantity of the spontaneously voided urine (which in one case amounted to 16½ oz. on the first day) increased steadily and satisfactorily, indeed, faster than he has been wont to observe in such cases when the acute œdema of the prostate is reduced. These results are certainly not to be explained by the quickly subsiding hæmostasis or blanching of the mucosa ; but probably may stand in direct relation to the immediate effect of the intervention. Frisch has always held the opinion that in many cases of retained urine following prostatic hypertrophy, in addition to the mechanical impediment caused by the enlargement of the gland, a certain part is played by the excessive muscular tension of the internal sphincter. Inasmuch as in the act of urination the relaxing of the sphincter is always primary, and this (as is not seldom the case in neuroses without change in the volume of the prostate) causes the patient the

greatest trouble, it is conceivable that the psychic impression produced by the first spontaneous urination, be it ever so slight, helps the patient afterwards by facilitating the relaxation of the sphincter which induces micturition.

The preparation used by the author consists of adrenalin chloride, 0·1 ; sodium chloride, 0·7 ; chloretone, 0·5 ; distilled water, 100·0.

Detection of Renal and Vesical Calculi by the X-ray.—Henry P. Moseley⁴ gave several useful hints at a meeting of the New York Medical Society about X-ray detection of urinary calculi. They may be summarised as follows: Before attempting to examine a person for *renal calculus* by the X-ray, the bowels should be most thoroughly emptied by a cathartic, and by enemata, and the patient should be forbidden to take more than very light food for the twenty-four hours preceding the examination. This would help to exclude shadows formed by fruit stones, and would reduce to a minimum, shadows of air-bubbles in the bowel. A plate measuring 11 by 14 inches would usually be large enough. The X-ray tube should be placed directly over the umbilicus at a distance of 18 inches from the plate, and two radiographs should be taken at an interval of several days. Renal calculi composed of oxalates or of phosphates gave the best shadows. In attempting to diagnose *vesical calculi* by the X-ray, the patient should be placed upon the belly and the bladder should be empty. The fluoroscope was not suitable for this kind of work, for the shadows are very delicate, and it should be remembered that in order to do good work with the fluoroscope the examiner should remain in a dark room for ten minutes before making the examination.

Every expert radiographer allows that it is hardly possible in the case of a very stout person to make a radiograph which would clearly show a renal calculus. Many failures are due to faulty technique in the preparation of the negatives, while others are due to the use of X-ray tubes of the wrong form—some are good for visual purposes, others for photographic. The latter have to be carefully selected.

A. B. Johnson⁵ has made a series of experiments in order to determine the permeability of kidney stones of varying composition. He had collected a large number of such stones, and, on having them analysed, found that very few of them were wholly composed of uric acid. He found the latter to be so permeable that he would not be willing to express an opinion

regarding the shadows cast by them under the X-ray. On the other hand, if there were only 10 per cent of calcium phosphate, the shadow would be quite distinct, almost as much so as if the stone were wholly made up of calcium phosphate. In one case he had been able to detect, in a man weighing 12 stone, the presence of a stone in the ureter weighing only $1\frac{1}{4}$ grains. It was composed of oxalate of lime.

Rupture of the Urinary Bladder.—There has been an unusual record this last year of cases of rupture of the urinary bladder, and they serve to illustrate the difficulty of the diagnosis, the different positions of the ruptures, and the varying degrees of violence necessary for the tearing of the viscus; but all combine to carry home the lesson of early and judicious operation.

Dr. Fiske Jones,⁶ in adding two cases of recovery after suture for intra-peritoneal rupture, discusses the causes of the surgeon's failure. He mentions that there are 54 cases of intra-peritoneal rupture treated by suture, with a death-rate of 63·5 per cent before 1893, but that death-rate has fallen in the last ten years to 27·5 per cent. He considers this decrease due to improvement in the technique of the operation, and to the exercise of more care in making a diagnosis. He lays great stress upon one of the great causes of peritonitis in these cases—*careless catheterisation* for diagnostic purposes. "Careless catheterisations," says Fiske Jones, "is so easy, and perfect asepsis in such cases so difficult, that catheterisation should be one of the last instead of one of the first things to be done. The injection of boracic acid or salt solution is still more dangerous. The catheter is put into the bladder, pushing infected material in the urethra before it. This material, including bacteria from the inside of the catheter, if it has not been boiled, is washed into the abdomen through the opening in the bladder. When we consider that we have the basin, the solution, the syringe, the catheter both inside and out, and the urethra to sterilise, before we can be sure that we are not introducing bacteria into the peritoneal cavity, it is easy to believe that the injection test is a dangerous procedure. Owing to the irritation caused by the urine, it takes very few bacteria to start a general peritonitis. Cases of this class are no doubt becoming more frequent." He points out that infection of the peritoneum at the time of operation has been decreased to a considerable extent by improvement in technique, but it is a contingency which may happen at any time, even in the hands of the most careful

surgeons; also that peritonitis owing to leakage is always going to be a danger, for, in spite of the greatest care in the suturing of wounds, occasionally one will leak. Walsham reported a case in 1888 in which leakage was due to giving way of catgut sutures. Careful suturing with silk through the peritoneal and the muscular coats only, with proper abdominal drainage, will reduce the death-rate.

The author describes some points in *technique* which seem worthy of mention. Dr. Alexander's suggestion of first opening the pre-vesical space is a good one, and will undoubtedly save opening the peritoneum in some cases. The ease with which the suture of the bladder wound is accomplished depends largely upon the position of the patient. The incision should be made with the patient flat, after which the Trendelenburg position should be used, and the intestines walled off with large gauzes. The fear of infecting the abdomen by this position is hardly worthy of consideration, unless the patient has been kept in the upright position from the moment of the accident and until every drop of urine has been got out of the abdomen. This, of course, is an impossibility.

Walsham speaks of the difficulty of suturing the lower end of the wound. This can be obviated largely by putting the patient in the Trendelenburg position, by leaving the ends of each successive suture long, and by beginning to suture at the upper end of the wound. By this means the wound is pulled up within easy reach, and each suture below can be placed without difficulty. A round, full-curved needle in a needle-holder with a long handle, which can be held with the fingers instead of the whole hand—*i.e.*, an elongated hæmostatic with short, powerful jaws—makes the suture a comparatively easy one. Suture material should be strong enough to hold a considerable strain for several days, and should be easy to handle. **Fine Twisted Silk** seems to be on the whole the most satisfactory material.

After the sutures are placed, many surgeons use the injection test for their line of sutures. This seems an unnecessary delay and an unnecessary strain upon the sutures. We suture intestines without any test of our line of sutures, and why should we delay here? **Drainage of the Abdomen** is by far the safer method, and gauze drainage is preferable to tubes. Gauze will not only effect a walling-off of the sutured region, but by adhering to the bladder wall will relieve the sutures of a great deal of

strain during the first four or five days. If the gauze is not taken out too soon the pulling will not injure the wound in any way. When we use drainage we may not get such brilliant results as we should if we closed the abdomen at once; but is not the patient's life of more importance than a brilliant result? Alexander reported four cases of peritonitis due to leakage of the bladder wound.

The published cases do not help us on the question of **Drainage of the Bladder**, as all methods have been used, but none often enough to give us any definite results. The tendency has been, however, towards either catheterising the patient, or making him urinate at frequent intervals. Perineal drainage has few advocates at the present time. Dolan thinks that there is less danger of infection if a sterilised catheter is put in for constant drainage, than if the patient is catheterised at frequent intervals.

In considering the symptoms of the two cases he records, he points out that in both there were: (1) Sudden, severe pain in the lower part of the abdomen which remained as a constant pain; (2) Constant desire to urinate, with inability to do so; (3) A preference for erect or partially erect position of the body rather than the recumbent; (4) General tenderness, but little or no rigidity. (The abdominal wall was so lax in both cases that it bulged with the pressure of the free fluid in the abdomen.) (5) A small quantity of bloody urine in the bladder; (6) Dulness in the flanks. As an aid to diagnosis he does not recommend Walsham's method of injecting air into the bladder, because of the collapse and intense abdominal pain which may ensue.

As to the injection of **Boracic Acid**, the author believes it to be one of the causes of general peritonitis in these cases, and therefore he thinks it ought to be used only in cases in which it is a positive necessity, and then only when the patient is prepared for immediate operation.

Daly and Harrison⁷ record a case which is most encouraging to future operators, for the man recovered, although the operation was not commenced until sixty-four hours after the accident, and in addition the patient tore open his wound on the eighth day, and pulled out two feet of his intestine.

Symptoms.—Shaw McLaren⁸ summarizes as follows: The accident may be caused by comparatively trifling violence, such as stumbling and falling forward on the ground, if the bladder be full. Rupture usually takes place at the posterior superior part of the bladder, because this is the weakest and least

supported place. The direction of the tear is generally vertical, from the fact that the circular muscular fibres are very thin at this part of the organ. The main symptoms of intra-peritoneal rupture are shock, pain in the abdomen, vomiting, inability to stand, desire to urinate, and the passage of a small quantity of blood-stained urine. The cardinal and characteristic symptom is the passage of very small quantities of *blood-stained urine—blutige anurie*, as the Germans happily call it. On passing a catheter the bladder is found contracted and empty. The injection test consists in introducing a definite quantity of water into the bladder, and noting if it can all be withdrawn again. If only a part returns it is a sign of rupture, but the recovery of the whole does not exclude the accident. In a patient in whom this test was applied more than once, it was found that sometimes the whole of the fluid injected could be withdrawn, while at other times only a part was got back. On *post-mortem* examination the rupture was discovered very near the neck of the bladder, so that when the catheter was introduced far into the organ its point occluded the tear, and therefore at such times the whole of the fluid could be withdrawn. Such a case shows that the test is not always trustworthy or diagnostic. Inflation of the bladder with air which, if a rupture exists, escapes into the general peritoneal cavity and causes disappearance of the liver dulness, has been suggested, but is not an advisable test. In cases of doubtful diagnosis the symptom of *blutige anurie* is of the highest value, and far outweighs all the rest. Theoretically, it may also result from contusion of the kidney or rupture of the urethra, but in each of these other symptoms co-exist, and their differential diagnosis is not difficult. Sometimes in rupture of the bladder the symptoms are delayed for days, but even in such cases the history will show that immediately after the accident the patient has passed bloody urine in small amount.

Death in this condition is due either to septic peritonitis or uræmia. The urine is normally aseptic, and it is probable that the organism gains entry into the peritoneal cavity from the bowel, which is injured at the date of the accident.

Removal of the entire Bladder.—Complete extirpation of the bladder is one of the rarest operations of surgery, and is almost always performed for malignant disease. Wendel, who has collected the literature, states the immediate mortality after complete extirpation in the male to be 60 per cent (10 cases,

6 deaths), after partial extirpation 24·5 per cent (57 cases, 14 deaths). This enormously high death-rate is due mostly to two causes—shock or collapse, and uræmia.

The case recorded last year by Mr. Herbert Lund⁹ is apparently the first in which the whole of the bladder was removed for papilloma, but the patient, a man, æt. fifty-seven, died on the third day. It cannot be said that the operation is difficult, but it is certainly very severe, and rarely of any value.

In women total extirpation is much simpler, but even here success is rarely obtained, and the relief is not commensurate with the great risk to life. Cases, however, are recorded from time to time: one is by Mr. Mayo Robson¹⁰ in which the procedure was undertaken as a last resource for vesical growth, the woman being forty-two years of age. The ureters were diverted into the vagina, the space behind the pubes left by removal of the bladder being drained by two rubber tubes, and a strip of iodoform gauze brought out through the lowest part of the vertical incision. The ureteral tubes passed out of the vaginal orifice into two bottles, the urine from each kidney being separately collected. The whole operation occupied about one hour and a quarter, and the patient was put to bed in very fair condition. Three pints of saline fluid were given by intravenous injection, and another pint was administered by enema, after which the pulse was good, and she speedily regained consciousness. She had comparatively little pain, and her temperature kept normal for the first week from the time of operation. Normal urine passed freely from the right ureter, but that from the left was offensive, bloody, and scanty from the first. It was, therefore, quite clear that the left kidney had already become affected, and, as might have been expected, some pain was complained of in the left renal region. In the course of the second week, although there were no abdominal symptoms nor any other sign of peritonitis, the patient's breath began to have a urinous odour, and though her temperature varied little from the normal, the pulse became rapid and feeble, and she died uræmic on the thirteenth day.

Removal of the entire Bladder and Prostate.—Mr. Malcolm Harris, of Chicago,¹¹ reports an important case of this formidable procedure, and as the operation was followed by partial though short-lived success, and involved the retention of the apex of the bladder to form a new viscus, it is wise, perhaps, to mention the steps in detail. The retention of a portion of the bladder

wall, however small, into which the ureters are to be stitched, and the whole to be fixed as near the posterior end of the urethra as possible, with a view to its ultimate regeneration into a serviceable bladder, seems a step in the right direction. The bladder was freed by blunt dissection in each side as far down as the base. The urethra was now divided close to the triangular ligament, and beginning at this point and working backward and upward, the prostate and bladder were separated from the rectum. This, which was the most difficult part of the operation, was much facilitated by an assistant introducing two fingers into the rectum, thus raising all the parts well forward. The hæmorrhage during this part of the operation, although considerable, was not so severe as had been anticipated, and was materially lessened by keeping the bladder well drawn forward, that is, towards the suprapubic opening, as fast as it was separated from the rectum. The ureters, as soon as they came into view, were easily divided beyond the disease. The right ureter was considerably enlarged and tortuous, owing to the obstruction which the growth had produced at the ureteral opening. Some small, enlarged lymph glands which were found in the connective tissue to the side of the bladder were removed. As the vertex of the bladder was not involved in the diseased process, a portion of it, about 6 to 7 centimetres in diameter, was retained. The remainder of the bladder and prostate were removed. Small slits were made in the remnant of the bladder, and the ureteral ends drawn through and stitched with catgut. This small portion of bladder was then stitched by its edge to the inner edge of the suprapubic opening, except at the lower part. The cavity in the pelvis was packed with gauze, and a large rubber drainage-tube inserted to the bottom of the cul-de-sac. The peritoneal cavity was not opened. Time of operation, about one hour and thirty minutes. There was considerable shock, but this was slowly recovered from, and in about two weeks the patient was able to sit up. The cavity filled in quite rapidly, and the tube was soon dispensed with. In about a month the patient had gained in strength so as to be up and around. The ureteral openings in the small, practically exstrophied bladder were easily seen, and the urine escaping from them was clear, and on analysis normal, with the exception of a small amount of pus from the surrounding parts. On drawing the edges of the suprapubic opening together the lower part of the small bladder would dip slightly behind the upper

edge of the symphysis pubis. A catheter introduced through the penis reached the small bladder, and nearly all the urine would drain off through the catheter. It was, therefore, retained permanently in position. The patient was walking out of doors daily, and his general health was improving rapidly. During the latter part of November, however, while out of doors one day he was taken with a chill, and developed a right-sided croupous pneumonia, from which he died December 3, 1901.

Syphilis of the Bladder.—It used to be asserted that syphilis did not attack the bladder, but Margouliès¹² believes that the disease is of much more frequent occurrence than the literature seems to indicate. The scarcity of reports is due to the difficulty of diagnosis in such an affection. He reports three cases in which there were marked symptoms of cystitis accompanied by persistent hæmaturia, without any assignable etiological factor. All of these cases resisted long-continued local treatment, hence cystoscopic examinations were made. In the first case tumours resembling carcinoma surrounding one of the ureteral openings were discovered. In the second case a diffuse cystitis was found, and in the third a small ulcer at the base of the bladder. All the usual causes of such affections were dismissed by exclusion. The fact that the third case gave a definite syphilitic history, and that in the other two cases there were numerous scars on the legs accompanied by general glandular enlargement, led to the suspicion of syphilis. **Antisyphilitic Treatment** caused a rapid amelioration of all the symptoms, and a complete disappearance of the pathological changes in the bladder.

The following conclusions were made from the observations:—

(1.) In syphilis one may observe ulcerations and gummas of the bladder, and syphilitic cystitis.

(2.) The manifestations of syphilis of the bladder are the same as in syphilitic affections of other internal organs, and are not accompanied by any characteristic symptoms.

(3.) In order to establish a diagnosis, if all the other etiological factors have been dismissed, it is always necessary to keep in mind, especially if the patient presents a history or signs of syphilis, that the bladder affection may possibly be of a syphilitic character.

(4.) It is necessary to suspect syphilis whenever the local symptoms of the disease are not in accord with the relative satisfying general condition of the patient; and equally so whenever the modifications in the composition of the urine are insignificant.

(5.) Finally, in doubtful cases of bladder affections, when the disease has resisted prolonged local treatment, it is indispensable to resort to anti-syphilitic treatment. If a cure is established, a diagnosis of syphilis of the bladder may be made.

REFERENCES.—¹*New York Med. Jour.* Jan. 1902; ²*Med. Rec.* April 5, 1902; ³*Therap. Gaz.* Oct. 1902; ⁴*Med. Rec.* Jan. 10, 1903; ⁵*Ibid.*; ⁶*Ann. Surg.* Feb. 1903; ⁷*Brit. Med. Jour.* Jan. 10, 1903; ⁸*Med. Press.* June 11, 1902; ⁹*Lancet*, Dec. 13, 1902; ¹⁰*Brit. Med. Jour.* Nov. 8, 1902; ¹¹*Ann. Surg.* Oct. 1902; ¹²*Ann. d. Mal. d. Organ. Gen. Urin.* April, 1902.

BLASTOMYCETIC DERMATITIS.

Norman Walker, M.D.

In a recent paper Gilchrist¹ thus summarizes his investigations in this disease: "It is primarily and in the large majority of cases a chronic infective disease of the skin only, occurring in adults of between twenty and sixty years of age. The lesion begins as a papule or a nodule, which usually becomes pustular and then breaks down, with the formation of an indolent, wart-like lesion, or in rare cases may go on to form a sub-epidermal abscess. When more chronic a fungating, tender mass may form, and the discharge become foul-smelling, this being due to contamination with pus organisms, the original affection being painless and without smell. Scabs are formed in many cases, and these when removed show an ulcer with papillomatous base, and pus exuding between the papillæ, which are about the size of a pin head." In the very chronic lesions there is always some attempt at spontaneous healing, either with the formation of pinkish, elevated, rather firm, smooth scars, or soft, supple, atrophic scars. The pus is best examined by squeezing it out from between the minuter papillæ and mixing with liquor potassæ. The microscope then shows the blastomyces as doubly-contoured, refractile, budding bodies, averaging 12 μ in diameter. The disease is auto-inoculable, and has a predilection for the face and extremities, a common history being that secondary lesions had appeared a month or two after the primary. **Iodide of Potassium** is distinctly curative, and in addition should be combined with excision of small areas, and antiseptic measures to larger lesions.

In the same paper he describes a case in a negro, where the disease had evidently been contracted while in a penitentiary; it was exceptional in exhibiting sub-epidermal abscesses and enlargement of the glands. After six weeks' treatment with doses of iodide of potassium, increasing up to 30 grains thrice daily, he was practically cured.

Montgomery² recommends pushing iodide of potassium until the patient is taking from 200 to 500 grains per day, but even with this, small areas are still often left; in one case he helped the iodide treatment by a few exposures to **X-rays**.

Sequeira³ has recorded a case in a man, aged thirty-seven, who had never lived out of England, and was employed in a brewery, although he had a good deal to do with cattle and enjoyed a local reputation as a pig-doctor. In his patient the first lesion was observed under the left eye, and was followed in five months by another patch under the right eye; subsequently lesions appeared on the cheeks and scalp. Microscopic examination of the pus showed yeast-like bodies and cocci; cultivations did not grow, and this failure he ascribes to the existence of the cocci. **Iodide of Potassium** when pushed to 105 grains daily improved the case greatly.

Ormsby and Muller⁴ give a full account of the occurrence of this condition in a man of fifty-six: the first symptoms pointing to lung involvement like phthisis, being followed two months later by a patch on the thigh, and still later by ulcerating nodules all over the body. At the autopsy nodules were found in most of the internal organs, and pure cultures of blastomyces were obtained from these, as also from the skin nodules before death. Tubercle was excluded by culture, microscopic examination, inoculation into animals, and failure to get the tuberculin reaction.

REFERENCES.—¹*Brit. Med. Jour.* Oct. 25, 1902; ²*Jour. Amer. Assoc.* June 7, 1902; ³*Brit. Jour. Derm.* April, 1903; ⁴*Amer. Jour. of Cut. Dis.* March, 1903.

BLOOD (Clinical Examination of).

T. N. Kelynack, M.D., M.R.C.P.

In the *Medical Annual* for 1902 and 1903 such methods of investigating the blood for clinical purposes as were likely to be of service to the general practitioner were fully described. It is only necessary here to indicate the more important advances which have been made in the study of hæmo-pathology during the past year.

J. H. Bryant¹ in a helpful paper, peculiarly suited to the needs of the busy practitioner, indicates how the systematic examination of blood may render considerable aid in clinical work. H. French² records cases illustrating the value of systematic examination.

J. L. Morse³ in a study on the relation of chronic enlargement

of the spleen to anæmia in infancy, shows that considerable differences exist between the blood of adults and that of infants under the age of two years. The hæmoglobin, high at birth, becomes lower. The number of leucocytes per cubic millimetre is greater than in adults, averaging from 10,000 to 14,000. The percentage of the various forms are given as follows: small mononuclears, from 50 to 70; large mononuclears, from 5 to 15 polynuclear neutrophiles, from 30 to 40; and eosinophiles, from 1 to 10. The proportion of mononuclears is about thrice that of adults, and of polynuclears only about one half. Most pathological changes in the blood seem to be exaggerated in infancy.

The observations of A. Delille and A. Mayer, and also those of E. Alderhalden⁴ have gone far to throw doubt on the accuracy of the opinion that rapid augmentation in the number of the red corpuscles of the blood results from residence in high altitudes and exposure to rarified air.

William Sengel,⁵ as the result of an extensive research into the condition of the blood during *pregnancy*, *parturition*, and the *puerperium*, arrives at the following conclusions; (1) During the first three months of pregnancy there is frequently anæmia, but no hyperleucocytosis; (2) The blood during the remainder of pregnancy is usually characterized by increase in the number of red blood corpuscles, in hæmoglobin content and in leucocytes, the last being especially increased in primiparæ; (3) A greatly-increased leucocytosis occurs during parturition, being greater among primiparæ; (4) The hyperleucocytosis rapidly diminishes after labour, showing a slight rise about the fifth or seventh day and again about the eleventh day; (5) This hyperleucocytosis is due to the polynuclear neutrophiles; (6) During the first ten days of the puerperium there is usually a diminished number of red blood corpuscles and of hæmoglobin content; (7) There is often a polycythæmia after the second week of the puerperium; (8) Hyperleucocytosis disappears in normal cases by the fifteenth day; and (9) Simple mastitis, suppurative mastitis, post partum hæmorrhage, and frequently puerperal sepsis, cause a marked hyperleucocytosis above that already existing.

Much attention has recently been directed to the estimation of the *alkalescence* of the blood, which is attended with considerable difficulties. Various methods have been employed, among the best being those of Lowry, Schultz-Schultzenstein, von Limbeck, and Wright. N. Labbe⁶ finds that the alkalinity varies at different ages; it is highest at birth, but after the first

year falls rapidly. The minimum is attained between one and three years, when the alkalinity again rises, and the adult standard is attained by the age of sixteen. In old people it again falls. During digestion the alkalinity increases, but falls during fasting. In infectious diseases and those due to the action of toxins, there appears to be a connection between the reaction of the blood and the resistance of the organism. Infectious and acute intoxications diminish the alkalinity. In diabetes the alkalinity is diminished. Some observers state that a diminished alkalinity also occurs in cancer. The alkalinity of the blood appears to be generally *diminished* in enteric fever, tuberculous disease with glandular involvement, gastric ulcer, spleno-medullary leukæmia, secondary anæmias, cholera, advanced diabetes, and in practically all conditions where the general strength is lowered. An *increased* alkalinity is said to occur in catarrhal jaundice, amyloid liver, cholelithiasis, croupous pneumonia, phthisis, influenza, rheumatic fever, rubeola, and appendicitis. In certain pyrexias of infectious origin it would seem that there is considerable variation in the alkalescence, at one time increased and another diminished.

Arthur Dare⁷ has introduced a new method of hæmo-alkalimetry, in which, instead of employing litmus, lachmoid, erythrosin or other chemical indicators, use is made of the alteration in the spectrum of oxyhæmoglobin brought about by neutralisation or acidification of the blood.

V. F. Orlovsky⁸ considers the alkalinity of the blood plasma to be a constant quantity. Marked lowering of the alkalinity of the plasma was only found in cases of advanced cancerous cachexia, in saccharine diabetes, and in marked anæmia. The alkaline constituents of the blood are contained not only in the plasma, but also in the red corpuscles; no variation seems to occur with increase in the leucocytes. A. P. Beddard, M. S. Pembrey, and E. I. Spriggs,⁹ show that in the blood of diabetic patients the depression of the alkalinity of the blood and the diminution in the CO₂ content run approximately parallel, except where sodium carbonate or bicarbonate is given.

The character and reaction of the *blood in mental disease* still remain an almost *terra incognita*. R. Pugh,¹⁰ finds that in epilepsy a low average alkalinity occurs in the period between the seizures, with a sudden and pronounced fall immediately prior to a fit, and followed after the attack by a further diminution. In general paralysis of the insane there seems to be always

a low degree of alkalinity, and this is especially marked in acute cases. In acute mania especially, when intense motor restlessness is conspicuous the alkalinity is lowered. The alkalinity appears to remain normal in cases of chronic mania, chronic melancholia, and chronic dementia. J. W. Fisher¹¹ in a study of the blood in cases of manie-depressive insanity, arrives at the conclusion that no constant blood changes accompany the condition, and that anæmia when present is due to malnutrition resulting from exhaustion, insomnia, and the other associated conditions.

C. P. Emerson¹² indicates the relative advantages of various forms of **Hæmoglobinometers**. Fleischl's, owing to its expense, size, inconvenience in use, and especially to the many sources of error, is diminishing in popularity; but Miescher's modification is considered a most accurate instrument. The familiar apparatus of Gowers is recommended as neat, easy to use, and quite accurate, but many worthless forms have been introduced by unscrupulous manufacturers. The Dare instrument is recommended, but the pipette plates are fragile, and the readings must be made rapidly. The simple Tallquist scale, with care, gives fairly accurate results.

C. A. Mac Munn¹³ advocates the use of **Photography** as an aid in counting erythrocytes. The negative plates answer equally well with the positive for their enumeration.

The almost universally adopted procedures for the enumeration of the formed element of the blood are (a) The making of a definite dilution of the blood; (b) The measuring off of a definite volume of this dilution; (c) The enumeration of the corpuscles contained in a series of measured volumes of this diluted blood; and (d) The multiplication of this number by a factor which expresses the dilution and the relation of the volume of diluted blood counted to the standard volume of blood. But A. E. Wright¹⁴ holds that standard pipettes and micrometrical rulings of the hæmocytometer may be dispensed with, and that the diameter of the field of the microscope being once determined, the only apparatus required for the estimation of the blood corpuscles is a plain cell of known depth.

W. M. Strong and C. G. Seligmann¹⁵ have introduced a new method for counting the blood corpuscles. Five cubic centimetres of blood are diluted a hundredfold with a fixing solution containing methyl violet. For the white-cell count five cubic millimetres of this mixture are blown into a slide from a pipette

graduated to deliver this quantity. The drop is allowed to dry, and then mounted in Canada balsam. When such slides are examined with a $\frac{1}{6}$ -inch objective, the white cells are seen to be stained a conspicuous blue among the unstained red corpuscles. The former are counted by going over the whole of the dried-up drop with the aid of a mechanical stage and then, knowing the dilution of the blood, the number of white cells per c.mm. can be readily calculated. For the red-cell count a further dilution of the first hundredfold dilution is made into a solution containing eosin. Five cubic millimetres of this are placed on a slide, dried and mounted. From the total number of red cells present in the film formed by the dried-up drop, the total number of red cells per cubic millimetre can be easily estimated.

W. G. Savage¹⁶ advocates **Stengel's Method** for leucocyte enumeration in ordinary routine work. In brief the method is as follows: Use a Thoma-Zeiss small pipette, *i.e.*, the one ordinarily used for red corpuscles, and collect the blood exactly as for the enumeration of red corpuscles, except that the blood should always be collected up to the 1.0 mark, and the dilution should be made with some coloured fluid such as Toisson's solution or Sherrington's fluid. The red corpuscles are first counted in the ordinary way. To count the leucocytes draw out the eyepiece until a diameter of the field of vision is just spanned by an exact number of squares. Call this number x ; *i.e.*, x = the number of squares which exactly stretch across a diameter of the field of vision. The ruled squares need now no longer be taken into account, but only the fields of vision. Count the number of leucocytes in any recorded number of fields of vision, taking care that the fields do not in any way overlap. The stained leucocytes can be readily distinguished from the red corpuscles. Divide the number of leucocytes by the number of fields of vision counted, to obtain the average number per field of vision. Let this = y ; *i.e.*, y = the average number of leucocytes per field of vision. The larger the number of fields of vision counted the better. Then, with the blood diluted 100 times, as recommended, the number of leucocytes per cubic millimetre = $\frac{5,600,000y}{11x^2}$. Thus x and y only have to be determined, and a simple calculation gives the result. Such a formula is available for any microscope and for any eyepiece.

A. G. Levy¹⁷ shows that as ordinarily employed for the esti-

mation of the specific gravity of the blood, **Hammerschlag's Method** is open to serious error.

Placzek¹⁸ in a study of the *blood changes in drowning* seeks to show that the dilution of the blood which occurs may be determined for medico-legal purposes by investigation of its specific gravity. Coagulation of the blood would interfere with the accuracy of a specific gravity determination, but in fatal cases of drowning the blood usually remains long fluid. Decomposition is said not to invalidate the result.

J. C. Da Costa, jr.,¹⁹ in a study of degeneration of the erythrocyte, shows that *polychromatophilia* is a sign of extreme blood impoverishment. Nucleated erythrocytes of the megaloblastic type are evidence of a severe anæmia. Granular punctate basic degeneration is never found in normal blood; it has been produced experimentally by the administration of lead, atropine, methylene-blue, and other poisons; clinically it is certainly found in lead poisoning before other blood changes are noticeable, and sometimes it is associated with various toxæmias, the presence of intestinal parasites, and malaria.

P. Schmidt²⁰ finds basophile granulation of the red corpuscles readily occurs in rabbits and guinea-pigs after sub-cutaneous injections of phenyl-hydrazin, and considers such to be of nuclear origin. E. Grawitz and others consider the so-called granulation to be degeneration products of the hæmoglobin contents.

P. Schmidt²¹ in a study on *regeneration* of the blood, finds that basophilic granules and polychromatophilia appear especially in the convalescence of anæmia at a time when the general condition improves. This occurs in anæmias of toxic as well as of traumatic origin. In many cases of experimental anæmia, as well as in human anæmias, all stages can be observed in a single blood-cell, from gross nuclear changes to the finest dust-like granules. In some cases of experimental anæmia, the granules can be seen exclusively in the nucleated red cells. Basophilic granules and polychromatophilia can be observed physiologically in the blood of new-born animals and in embryos of advanced development, while at the same time, nuclear rests and many normoblasts are visible. It is considered that the basophilic granules are derived from the nucleus, and represent a regenerative process, and that the polychromatic faculty of the red blood cells arises in the majority of instances from the dissolved nuclear substance mixed with hæmoglobin. In other

words, the basophilic granules and the polychromatoses are young forms of blood cells, and represent the regeneration of the blood.

S. Talma²² describes a condition of intraglobular methæmoglobinæmia, which consists in the conversion in the red blood cells of a small quantity of oxyhæmoglobin into methæmoglobin. The condition is not incompatible with life, but methæmoglobin dissolved in the serum causes degeneration of all the organs. Spectroscopically, Talma has demonstrated this condition in three human subjects. Only one of the patients recovered. Cyanosis and a feeling of anxiety are among the prominent symptoms. The disease possibly depends on some intestinal toxin.

Richard C. Cabot²³ has drawn attention to certain *ring bodies* in anæmic blood. They consist of a set of granulations arranged distinctly in a circle, with no others inside or outside the circle. With Wright's modification of Leishmann's stain, this ring is stained not blue, but red. At one point in the ring is often seen a large dot, reminding one a little of the nucleus of a malarial parasite. There are several groups and kinds of rings. The rings are not parasites of any kind; their occurrence in diseases as diverse as lead poisoning, pernicious anæmia, and leukæmia would seem to settle that point. That they have some connection with anæmia is equally clear, since in every case in which they have been found a marked anæmia has been present. That they do not represent merely accidental configurations of the ordinary granular stippling is shown by the fact that they are sometimes continuous and not resolvable into discrete granules, and because they sometimes occur in cells quite free from stippling. It is suggested that they may represent nuclear remains; that is, portions of the nucleus especially resistant to the action of whatever force it is that destroys the nucleus and ultimately the cell itself.

Among corpuscular investigations the so-called **Glycogenic Reaction** is of interest. G. Spezia²⁴ in studying the reaction with iodine, showing the presence of glycogen in the white corpuscle, finds that this reaction is manifested after the injection of various nutritive substances; that in pathological cases it attains its highest point in the inflammatory centre, as for instance in the foci of pneumonia or broncho-pneumonia when the droplets of glycogen vary from 0.5μ to 20μ ; that it is greater in severe toxic affections than in mild ones; that it is accom-

panied by hyperleucocytosis; and that it is also associated with evidences of cellular division.

G. L. Laporte²⁵ in reviewing the various **Blood-stains** now in use, describes a new modification of Jenner's very similar to that of Leishman's. Two solutions are employed. No. 1 is an unfiltered $\frac{1}{2}$ per cent solution of Jenner's powder in methylic alcohol; No. 2 is one part of Unna's polychromic methylene-blue solution to 150 parts of distilled water. Five drops of No. 1 are dropped on the unfixed blood film held in a pair of Cornet's forceps, and allowed to remain for one minute. Then, without removing, ten drops of No. 2 are allowed to fall on the film, the two stains being mixed by gently moving the forceps. The combined stains act for five minutes, and are then washed off with distilled water, some of it being allowed to rest on the cover-glass about a minute longer with occasional agitation of the forceps. The film is then rapidly plunged into a dilute acetic acid solution (1 drop of 50 per cent acetic acid to 10 oz. of water) until it is of a reddish or pink colour; the preparation is then rinsed in water and dried in air.

O. F. F. Grünbaum²⁶ considers **Cryoscopy**, or the estimation of the freezing-point of blood, to be of service in renal disease, where the quantity of salts and of urea in the blood is greater than normal. The larger the quantity of these substances present in the blood, the lower the freezing-point. The average freezing-point of normal blood is -0.56°C. , and when it falls to -0.6° or lower, grave doubts as to the efficiency of the kidneys must be entertained.

Justus's Test is still considered by many to be of some service in assisting diagnosis in certain doubtful cases of syphilis.

Much attention is still being given to a study of the variations in the number and character of the leucocytes met with in both physiological and pathological conditions. Robert Muir²⁷ in a study of the clinical significance of **Leucocytosis** and the general laws underlying leucocyte variations, shows that ordinary leucocytosis signifies the presence of substances in the blood which exert a positive chemiotaxis on the neutrophiles of the marrow, and that this stimulus is being responded to. The condition of the leucocytes is to be taken as a valuable aid to diagnosis, but if an attempt is made to use it as a means of diagnosis to the neglect of other clinical symptoms and signs, only error and disappointment can result. The various infections can be conveniently divided into two classes: those in which the toxins

of the microbes concerned produce a neutrophile leucocytosis, and those in which they have not this action. A blood examination enables us to place the disease amongst the members of these groups, the possibility being always kept in view that there may be two infections belonging to both groups, *e.g.*, typhoid fever and suppuration. In certain cases, by the employment of the process of exclusion, the presence of leucocytosis may point strongly to some deep-seated inflammation or suppuration. When the diagnosis of one of the infections unattended by leucocytosis is established, the appearance of a leucocytosis will point to some complication of the nature referred to. As regards the significance of leucocytosis in prognosis, much judgment is necessary in interpretation. Absence of leucocytosis, or leucopenia, is usually a distinctly unfavourable sign in such conditions as pneumonia, plague, septicæmia, and diphtheria. In severe cases of hæmorrhagic small-pox myelocytes may be relatively numerous, sometimes more than 10 per cent. With respect to eosinophile leucocytosis it would seem that substances which, when present in the tissues, will attract the eosinophiles from the blood, will produce eosinophiles when they are present in the blood in sufficient quantities. **Eosinophilia** occurs most markedly in asthma, certain skin affections, and infections with various animal parasites.

Leucopenia occurs in uncomplicated cases of typhoid fever. Otto Nägeli²⁸ recognizes four stages: in the first, that of the gradually rising temperature curve, there is probably a neutrophile leucocytosis of moderate degree, which soon gives place to a reduction, and at the same time the lymphocytes are diminished and the eosinophiles completely disappear or are but rarely found; in the second stage, that of continuous pyrexia, there is a further reduction of the neutrophiles and lymphocytes, though towards the end of this stage the latter may gradually increase; in the third stage, with a remitting type of temperature, the increase of the lymphocytes becomes very distinct, and a few eosinophiles begin to reappear, but the neutrophiles decrease still further; and in the fourth stage, that of declining fever, a further diminution occurs in the neutrophiles, which now reach their minimum, while the lymphocytes increase to such a degree as to exceed the neutrophiles, and the eosinophiles return slowly towards their normal proportion. In the first few days after the decline of the fever the restitution of the neutrophiles begins, while the lymphocytosis persists for some weeks or even

months. These changes are of diagnostic and prognostic importance.

A. Kühn²⁹ shows that the leucopenia in typhoid fever is not only the most certain diagnostic feature of the disease, but one of the very earliest of the important signs.

J. J. Galbraith³⁰ shows that the hæmatology of *pulmonary tuberculosis* is complicated, and its significance obscure. Early stages are characterized by the total absence of a leucocytosis, while the later stages invariably show a leucocytosis caused by mixed infections. But in cases treated by the open-air method and on a diet rich in nitrogen, there occurred a moderately constant leucocytosis, a large absorptive leucocytosis, and an almost constant eosinophilia, the eosinophile cells varying from 4 to 5 per cent of the total leucocytes.

John T. Hewetson³¹ concludes that tubercle alone, excluding a meningitis, practically never produces any increase in the circulating leucocytes. Even large tuberculous collections of pus, when free from septic infection fail to produce any reaction upon the leucocyte wave. Tubercle, plus sepsis, gives a leucocytic increase dependent upon the amount of sepsis present, and it is possible that such may be of practical service in determining the presence or absence of mixed infection prior to operation, especially in connection with the kidney, peritoneum, and pleura.

L. Rogers³² has sought to show that a differential leucocyte count may be of service in distinguishing between typhoid fever and malarial remittent fever.

L. C. Bruce³³ has shown that during the first few days after the onset of *acute mania* there is marked leucocytosis. Mental improvement appears to be in proportion to the leucocytosis, and such observations tend to show that acute mania is of the nature of an infective condition associated with the presence of a toxic agent in the blood.

James Miller³⁴ furnishes a useful summary of work concerning the nature and origin of the cells which take part in the inflammatory process.

Leucocytosis has been observed to occur after massage.

Much discussion has occurred as to the significance and directing value of leucocytosis in *appendicitis*. M. Cazin and E. Gros³⁵ show that a leucocytosis of between 19,000 and 20,000 (and speaking generally we may take it that anything over 10,000 per cubic millimetre is to be considered an increase of the white corpuscles) commonly occurs in perityphlitis, even in the absence of localised

suppuration. Probably every attack of appendicitis accompanied by the least peritoneal reaction is followed by an increase in the number of the leucocytes, except in certain hypertoxic forms when the defensive reactions of the organism have not had time to take place. Initial leucocytosis in appendicitis in spite of a very high temperature and violent local pain, does not furnish any definite conclusion in regard to the future course of the malady, even when 20,000 or 25,000 white corpuscles per cubic millimetre are present. When, however, the number of leucocytes undergoes a considerable and permanent increase, this proves with certainty the existence of suppuration, whatever other symptoms may or may not be present. In every case of appendicitis it is well that blood counts should be made. Sonnenburg³⁶ considers examination of the blood in perityphlitis valuable for diagnosis and prognosis. C. J. N. Longridge³⁷ records results of a large number of blood counts in cases of appendicitis.

O. K. Williamson³⁸ has studied the relation existing between uric acid excretion and the breaking down of the leucocytes.

L. Napoleon,³⁹ in an investigation of the blood in *plumbism*, finds an average leucocyte count of 12,600 with maximum 25,500, and minimum 4,000; a moderate oligocythæmia was the rule, the hæmoglobin varied from 32 to 85 per cent, the colour index was inconstant, poikilocytosis was marked, macrocytes and microcytes were common, and nucleated reds and normoblasts were not infrequent.

H. G. Pesel⁴⁰ has published a useful summary of his thesis on the blood in *phthisis pulmonalis*.

Much work has been done on the biological or precipitin test for blood; a useful paper by G. S. Graham-Smith and F. Sanger⁴¹ summarises the chief points established, especially in their medico-legal aspects.

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14, 1903; ³¹*Birm. Med. Rev.* Oct. 1902; ³²*Lancet*, May 30, 1903; ³³*Jour. Ment. Sci.* April, 1903; ³⁴*Birm. Med. Rev.* April, 1903; ³⁵*Med. Press*, Sept. 30, 1903; ³⁶*Ibid.* Sept. 2, 1903; ³⁷*Lancet*, Oct. 24, 1903; ³⁸*Ibid.* June 6, 1903; ³⁹*Phil. Med. Jour.* Sept. 27, 1902; ⁴⁰*Med. Press*, Oct 28th, 1903; ⁴¹*Jour. of Hyg.* April, 1903.

BLOOD PRESSURE.

Prof. A. H. Carter, M.D., F.R.C.P.

The subject of blood-pressure continues to receive considerable attention, both as an aid to early diagnosis of circulatory disease, and as affording valuable therapeutic indications. Dr. Clifford Allbutt in an interesting paper¹ deals with the rise of blood-pressure in later life. He recognizes that there is no direct relation between arterial disease and arterial blood-pressure—in some cases it is high, in others low. He denies that, in those cases in which it is high, it depends upon arterio-sclerosis. He suggests that arterio-sclerosis is of three classes: (1) The involuntary—often hereditary, not necessarily or usually associated with rise of arterial pressure: the nature of which, intrinsic or extrinsic, is unknown, but does not lie in high living. (2) The mechanical—the result of long-persisting high blood-pressure, of whatever origin. (3) The toxic, resulting from such causes as lead, alcohol, or syphilis, in some of which the pressure rises, in others not. The first is common in old people; the second occurs at any time of life; while the third is usually met with in young adults. He considers that the fibroid kidneys so often met with in old people, have nothing to do with granular kidney, which he believes is of toxic origin, but are a secondary result of atrophy. Moreover, he states that many cases of large heart, with tortuous vessels and high blood-pressure, with or without a little albumin, but with no casts, begin with rise of blood-pressure, as the result of which the cardio-vascular changes occur, having no relation with Bright's disease, and no tendency to drift into it. He suggests that increased viscosity of the blood is an important factor in bringing about such rises.

The paper gave rise to much correspondence in the medical press. The subject is too complex to be dealt with here, but it is evident that there is as yet no consensus of opinion as to the exact conditions under which persistent rise of blood-pressure takes place.

Dr. Briggs² draws attention to the value of blood-pressure observations as a guide to the selection and use of stimulant drugs. In temperate persons, half to one ounce of **Whisky** produces a rise, never lasting more than thirty minutes, and

followed by a more persistent fall below the previous level, as a result of depressed excitability of vaso-motor nervous centres. Ten to fifteen drops of **Tincture of Capsicum** caused a rise of about the same degree and duration as from whisky, and was not followed by any fall. **Strychnia** given hypodermically caused a rise which came on later, and persisted from one to three hours. **Digitalin** acted very similarly, but the effect was of shorter duration. He considers that a combination of **Strychnia** and **Digitalin**, given hypodermically, is an ideal stimulant in toxic conditions and in cases of pure shock. Alcohol is not a true cardio-vascular stimulant, and whatever advantage belongs to its use, must be explained in other ways. Subcutaneous injections of normal saline fluids are also void of any stimulating effect.

The same writer, in association with Dr. Cook³ again dwells on the practical utility of exact observations of blood pressure, *inter alia*, (a) During surgical operations in which shock is to be expected; (b) In the study and treatment of chronic interstitial nephritis; (c) In cases presenting palpitation, irregularities of pulse, respiratory distress, and other symptoms of cardiac failure, and in which it has to be decided whether the case is one of failure of the cardiac muscle or a neurosis peculiar to the patient; (d) In attempting to make an accurate diagnosis between false and true angina pectoris; (e) In cases of suspected thoracic aneurysm, in which the unaided finger is unable to distinguish any difference in the radial pulses.

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BOILS. (See "Furunculosis.")

BRACHIAL PLEXUS.

Wm. Thorburn, F.R.C.S.

A number of papers having recently appeared in connection with affections of the brachial plexus and their treatment, it will be convenient to summarise the knowledge acquired within recent years, especially as we have not made any previous attempt to focus this somewhat extensive branch of modern medical and surgical literature. In 1901 Duval and Guillaïn¹ published an excellent little monograph which we have freely used, and which is very complete up to the date of its appearance.

The brachial plexus is derived from the fifth, sixth, seventh, and eighth cervical, and the first dorsal nerves, while it receives a branch from the fourth cervical, and it is also to be remembered

that sensory nerves are supplied to the arm by the second (and occasionally by the third) dorsal root. The obvious anatomical arrangement of these roots is described in all the text-books ; but anatomy alone does not allow us to trace the various roots to their ultimate distribution, and as a knowledge of this distribution is essential to the interpretation of diseases and injuries of the plexus, we may note some of the results hitherto obtained. These results are due to dissection, experimental stimulation, or division of various roots, a study of their diseases, and clinical examinations of diseases and injuries of the spinal cord at various levels.

Motor Distribution.—Duval and Guillain quote the conclusions of the present writer,² and Edinger³. To these we may add the scheme of Kocher, placing the whole in tabular form for purposes of comparison.

Root.	THORBURN.	EDINGER.	KOCHER.
C.4.	Supra-spinatus Infra-spinatus Teres minor (?)	Supra-spinatus Infra-spinatus Rhomboids Deltoid Biceps Coraco-brachialis Supinator longus	(K. does not distinctly assign any wider distribution to this branch, his diagrams simply joining it to C ₅ , to which he gives):— Supra-spinatus Infra-spinatus Rhomboids
C.5.	Biceps Deltoid Brachialis anticus Supinator longus Supinator brevis (?)	Biceps Deltoid Brachialis anticus Supinator longus Supinator brevis Pect. major (clavicular head) Serratus magnus Rhomboids Teres minor	Biceps Deltoid Brachialis anticus Supinator longus Supinator brevis Coraco-brachialis
C.6.	Subscapularis Pronators Teres major Latiss. dorsi Pectoralis major	Pronators Pect. major (clavicular head)	Subscapularis Pronator teres et quadratus Teres major Latiss. dorsi Pectoralis major

ROOT.	THORBURN.	EDINGER.	KOCHER.
C.6. <i>cont'd.</i>	Triceps Serratus magnus	Triceps Serratus magnus Biceps Brachialis anticus Extensors of wrist Extensors of fingers	Triceps Serratus magnus Pectoralis minor
C.7.	Extensors of wrist	Extensors of wrist Extensors of fingers Long head of triceps Flexors of wrist Pronators Pectoralis major (cos- tal head) Subscapularis Latiss. dorsi Teres major	Extensors of wrist Flexors of wrist
C.8.	Flexors of wrist	Flexors of wrist Flexors of fingers Small muscles of hand	Long flexors of fingers Long extensors of fingers
D.1.	Intrinsic muscles of hand	Intrinsic muscles of hand Extensors of thumb	Small muscles of hand and fingers

Branches of those roots which do not enter the plexus, such as the phrenic nerve (C.4) and the oculo-papillary fibres (D.1) are omitted.

On comparing these tables they will be found to present a very close similarity. Edinger assigns many of the muscles to more than one root, a view which may be quite correct, but which has little practical bearing, as each muscle appears to have only one main root of supply—a root whose injury or disease suffices to cause paralysis in the muscle. It is also to be noted that the present writer's arrangement is by no means complete, as it was not intended to be so, but merely to show the positive results obtained from a single series of observations. Thus it leaves out entirely the rhomboids, coraco-brachialis, subclavius, and pectoralis minor, about the innervation of which there is no great room for doubt.

There is thus an almost universal acceptance of the following schematic arrangement :—

FOURTH CERVICAL ROOT.

Diaphragm	} Above the plexus	Supra and infra spinatus
Scaleni		

FIFTH CERVICAL ROOT.

Biceps	Brachialis anticus
Deltoid	Supinator longus et brevis

SIXTH CERVICAL ROOT.

Subscapularis	Pectoralis major (in part)
Pronator teres et quadratus	Triceps
Teres major	Serratus magnus
Latissimus dorsi	

SEVENTH CERVICAL ROOT.

Extensors of wrist

EIGHTH CERVICAL ROOT.

Flexors of fingers.

FIRST DORSAL ROOT.

Intrinsic muscles of hand	Oculo-pupillary fibres (above the plexus)
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The following connections are also most highly probable :—

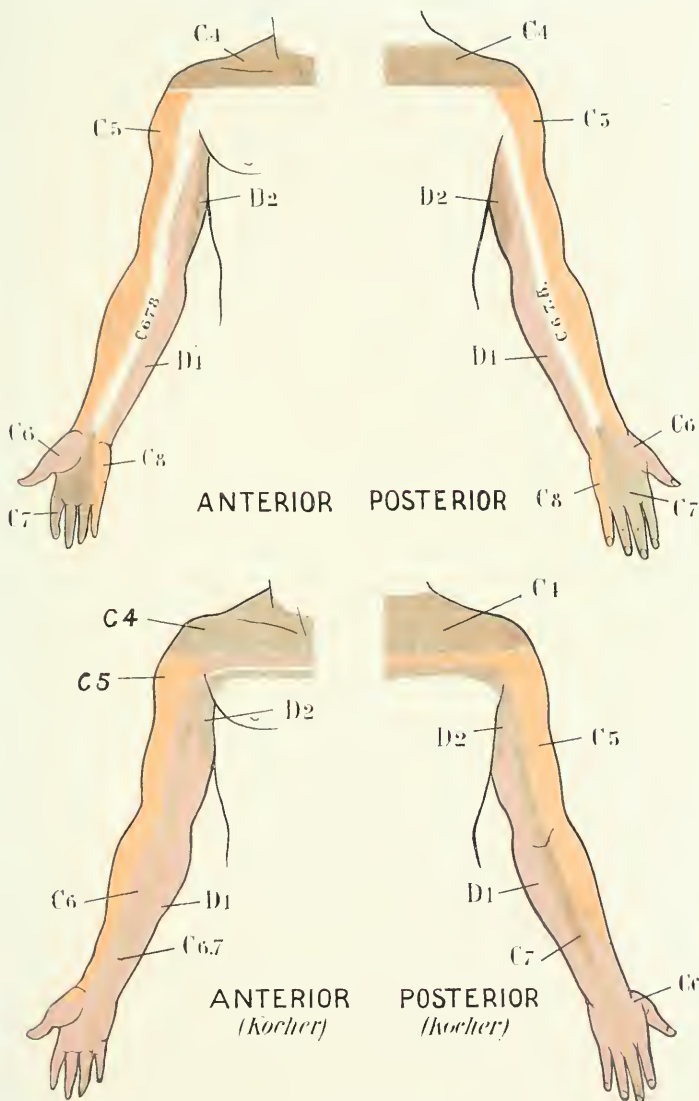
C.4. Rhomboids	C.5. Coraco brachialis
Teres minor	C.6. Pectoralis minor

The muscles whose innervation still presents the greatest difficulty are those of the flexors of the wrist and of the long flexors and extensors of the fingers—muscles whose action is difficult to dissociate clinically.

Sensory Distribution of Roots.—This subject was fully dealt with and illustrated in the *Medical Annual* for 1896 (p. 97) since which date observations have tended generally to confirm the results there indicated. The drawings in *Plate III.* illustrate these results, and also the later conclusions of Kocher.⁴ Between them there is little difference. Kocher indicates a narrow strip of prolongation upwards from the territories of the sixth, seventh, and eighth cervical roots towards the trunk, while my own diagram does not, but in the text of the article in the *Medical Annual* already referred to, will be found the expression of “my own strong opinion” that such strips exist. The principal difference, therefore, between Kocher’s scheme and my own, is that Kocher gives a considerable area of distribution in the hand to the first dorsal root, whereas it appeared to me that this root does not extend beyond the styloid process of the ulna.

PLATE III.

SENSORY DISTRIBUTION OF SPINAL SEGMENTS IN THE UPPER LIMB.



The diagrams taken from Köcher are not exact copies, as his original plates present certain differences among themselves.

Types of Paralysis of the Plexus.—Bearing in mind these anatomical and physiological data, certain common types of paralysis will now be readily appreciated. (1) The symptoms of a lesion of the *entire* plexus are obvious. (2) It is common to meet with a condition known as the *Duchenne-Erb* type, readily produced by injury, and illustrated by the traumatic “obstetrical paralysis” of Duchenne. This variety involves the fifth and sixth roots, which rise early and run together for some distance. (3) The so-called *Klumpke* type of paralysis involves the first dorsal root above the origin of the oculo-motor fibres, which run in the rami communicantes to the sympathetic, and includes also the whole or part of the seventh and eighth cervical roots. Thus we have three common types of affection involving respectively the whole plexus, its upper half, and its lower half. These types are subject to minor modifications according to the exact seat and nature of the lesion.

In the *Duchenne-Erb* or *superior brachial* type of lesion the most frequently paralysed muscles are the deltoid, biceps (coraco brachialis ?) brachialis anticus, and supinator longus, while the supinator brevis, infra spinatus, latissimus dorsi, teres major, pectoralis major, and serratus magnus may also be involved; anæsthesia is not, as a rule, very sharply defined, but involves the outer side of the arm and forearm in the region which our diagrams assign to the fifth cervical root.

In the *Klumpke* or *inferior brachial* type, which is much less common, paralysis affects all the intrinsic muscles of the hand; anæsthesia involves the inner side of the hand and forearm, and extends to some little distance above the elbow joint; and there are characteristic orbital symptoms due to paralysis of the dilator iridis and muscle of Müller (the pupil does not dilate in dim light, the eye recedes, and the palpebral aperture is narrowed), while there may also be vaso-motor paralysis of the right side of the face. Like the last, this type presents certain variations dependent upon varying situation and extent of the lesion.

Duval and Guillain give a formidable list of *causes* of paralysis of the brachial plexus, which we may summarise as follows:—

(1.) *Traumatic* causes: (a) Section,—accidental or surgical; (b) Contusions and tears about the shoulder; (c) Fractures and dislocations about the shoulder; (d) Fractures and dislocations of the spine; (e) Obstetrical paralysis.

(2.) *Non-traumatic*: (a) Neuritis, ascending, infectious, toxic, etc.; (b) Tumours, syphilis and other lesions of the meninges

and spine : (c) Swellings in the neck, tumours, aneurysms, and exostoses.

It is remarkable that they do not mention the supernumerary cervical rib, of which the presence may cause a paralysis of the inferior brachial type without orbital symptoms. This condition is not very rare, and presents certain well defined features not hitherto fully described.

Lesions of single roots of the plexus, or uni-radicular paralyses, are much more rare than the well-known compound types to which we have hitherto referred, and certain recently published cases are thus of special interest.

Farquhar Buzzard⁵ describes seven cases, which we may summarise briefly. Case I.—Male, æt. twenty-five, no obvious cause, pain in right neck and shoulder, atrophy and paralysis of right supra spinatus, infra spinatus, teres minor, and deltoid : slight weakness of biceps ; partial anæsthesia over deltoid ; gradual recovery. Case II.—Woman, aged forty : attack during convalescence from Malta fever ; pain, (soon passing away) shooting down right arm : atrophy of right thenar eminence, partial atrophy and paralysis of interossei and long flexors of fingers ; partial anæsthesia on inner side of forearm from just above internal condyle to just above wrist ; eye not affected : condition stationary. Case III.—Woman, aged fifty : sudden pain in left neck and shoulder followed by herpes, then paralysis and atrophy of supra and infra spinatus and deltoid ; some anæsthesia in “fifth cervical area” with scars of herpes ; adhesions in shoulder joint : mitral stenosis and old rheumatic fever. Case IV.—Girl, aged nineteen, gradual development after scarlatina and chorea some years before ; right side ; great atrophy of abductor and opponens pollicis ; less marked in adductors and flex. brevis poll. , marked in interossei, hypothenar muscles, and long flexors of fingers ; partial anæsthesia as in Case II ; no eye symptoms. Case V.—Woman, aged thirty-three ; development after anæmia at eighteenth year ; wasting of most of intrinsic muscles of right hand ; feeling of coldness in hand ; partial anæsthesia as in cases II & IV ; no eye symptoms. Case VI.—Woman, aged twenty-eight ; gradual development after influenza and gastric ailments : wasting and loss of power in abductor, opponens and adductores pollicis, less marked in interossei, lumbricals and hypothenar muscles (abductor min. digiti escaping), weakness of deep and superficial flexors of fingers and possibly of pronator quadratus ; partial

anæsthesia, as in Cases II, IV, & V; no eye symptoms. In addition to this inferior brachial paralysis, a distinct superior brachial affection, *viz.*, slight weakness of deltoid and partial anæsthesia over outer part of shoulder. Case VII.—Male, æt. twenty-eight, gradual development after influenza; much atrophy of abductor and opponens pollicis, less of flex. brevis and adductors; partial anæsthesia on inner side of forearm with “a narrow strip extending into the axilla”; no eye symptoms

Speaking of these cases collectively, Buzzard notes first that uni-radicular paralysis generally involves the fifth cervical or first dorsal root, which “may be a coincidence,” or “may point to a special susceptibility,” while he notes that paralyzes of intervening roots would be less readily noted and identified. The latter are, however, certainly very rare, and it is clear that the highest and lowest roots are the most exposed, at least to all forms of external injury and of pressure.

With regard to motor symptoms, it is noted that in Case I the lesion is in the fifth nerve before its union with the sixth, but after the origin of the branches to the rhomboids, levator anguli and serratus magnus, all of which arise while the trunk is still between the scaleni. The branch from the fourth cervical will here be involved with the fifth cervical, and it is very doubtful whether the latter plays much part in supplying the serratus magnus. In Case III the lesion having produced herpes, probably extended as high as the fifth posterior root ganglion, and the escape of the rhomboid is attributed to those nerves arising from the cervical plexus. Cases II, IV, V, & VI are closely similar, atrophic paralysis affecting “the long flexors of the fingers slightly, the interossei considerably, and the muscles of the thenar and hypothenar eminences in varying degrees.” Assuming that the first dorsal root only is here involved, this would place in that root the flexors of the fingers, as maintained by Herringham; they do not confirm the view of Herringham and Sherrington, that the superficial thumb muscles are supplied from a higher root than the first dorsal, nor (so far as I know) do any clinical cases. Charcot’s well-known case of a bullet wound of the first dorsal nerve resembles Buzzard’s cases; oculo-pupillary symptoms are of course absent in all these cases, because the lesion is below the origin of the rami communicantes. The anæsthesia and analgesia was in all cases of considerably less extent than the

probable distribution of the first dorsal root, presumably on account of the "overlap" of adjacent roots.

Incidentally, Buzzard notes that in every case the patient was unaware of the anæsthesia until it was clinically tested, and he suggests that the absence of the subjective recognition may be due to special peculiarities of affections of the plexus as compared with those of peripheral nerves. Lastly, muscular atrophy in lesions of the plexus is more marked than would be anticipated from the amount of paralysis. This fact is possibly connected with the peculiarities noted by Bruns (*infra*).

Edwin Bramwell⁶ records a case (male, aged eighteen) of uni-radicular brachial paralysis, limited to the first dorsal root, which closely resembles Buzzard's cases. Pain was felt on the inner side of the forearm, and the hand was cold; the thenar and hypothenar eminences were flat, the flexor tendons prominent at the wrist, and the hand slightly claw-like; weakness affected the deep and superficial flexors of the fingers and all intrinsic muscles of the hand; sensation of all kinds was impaired on the inner side of the forearm, from above the internal condyle of the humerus to the styloid process of the ulna; the orbital fibres were not involved.

As to the *pathology* of these lesions, Buzzard regards most of his as "vascular lesions," while Bramwell suggests that his may be due to pressure against "the sharp internal border of the first rib." Neither writer specifically excludes the presence of a supernumerary cervical rib, which is a not uncommon cause of uni-radicular paralysis of the first dorsal, especially in young adults.

Bikeles and Franke⁷ have investigated the segmental connections of the various nerves derived from the brachial plexus by cutting these, and examining the spinal cord four weeks later to ascertain the areas of degeneration; differences are observed in different animals, and the results are clearly not quite applicable to man. In the dog they found the following connections:—

Musculo-spiral n.	=	5c.	8c.	1d.
Median n.	=	8c.	1d.	
Ulnar n.	=	8c.	1d.	

In the cat the connection is roughly one segment higher.

With regard to the general *prognosis* of injuries of the brachial plexus, Bruns⁸ finds that this is less satisfactory than in similar injuries of more peripheral nerves; in the former case 26 per cent only recover, while in the latter the recoveries are

66 per cent. He is inclined to attribute this to stretching or other injury of the spinal cord, but it is more probably associated with the general symptomatic peculiarities above mentioned as connected with injuries of the plexus, although, of course, in some cases the plexus is torn away from the cord.

Eversmann⁹ makes an interesting contribution to the "obstetrical" variety of Duchenne-Erb or upper brachial paralysis, as he has actually observed the seat of the lesion. He describes a case in which, after turning and breech delivery, the arms were extracted with much difficulty; on the right side the clavicle was fractured but there was no paralysis; on the left side was typical obstetrical paralysis of the Erb-Duchenne type. The child dying two and a half months later without improvement in paralysis, a *post-mortem* examination revealed on the left side a hard flat cicatrix, about $\frac{1}{2}$ - $\frac{3}{4}$ c.m. in length and $\frac{1}{4}$ c.m. wide at the point of junction of the fifth and sixth roots, or the point in which neurological examination has always localised the lesion. He discusses several of the theories of the production of this form of paralysis, and then expresses agreement with Fieux¹⁰, Stölper,¹¹ and others, that the essential cause of injury is lateral deflection of the head. If the latter is present it may be forced down upon one shoulder, while if it follow the body, vigorous lateral movements are often made by the obstetrician. In either case the head is bent down to one side, and the opposite side of the neck is forcibly stretched. This lateral stretching will obviously bear most heavily upon the upper cords of the plexus, and will thus explain the selection for injury of the fifth and sixth roots. This view brings the causation of obstetrical paralysis of the Erb-Duchenne type into line with that of ruptures of the entire plexus, and allows us to assign all cases to direct traction, the only difference between the infantile and the adult cases being that in the former the plexus is stretched by deflection of the head, whereas in the latter the impact is more commonly received upon the shoulder.

The surgical *treatment* of injuries of the brachial plexus has been developed in recent years, and has now been extended by Kennedy¹² to obstetrical paralysis. In a case of rupture of the plexus, due to attempted reduction of a dislocation of the humerus, Wallis¹³ successfully resected a mass of nerve callus involving the roots of the plexus. Tuffier¹⁴ performed a similar operation in 1899. Two years previously, in a case of complete rupture of the plexus in a girl, the present writer removed, with

partial success, a mass of callus involving the entire plexus.¹⁵ Oppenheim¹⁶ quotes a case of Erb's paralysis sutured by Lesser, and Kennedy¹⁷ also performed with success the operation of callus resection and secondary suture. Of primary suture of the plexus and its roots there are numerous cases.

Kennedy reports three cases of obstetrical paralysis, in all of which the cicatrix was situated at the junction of the fifth and sixth cervical nerves. The first operation was performed two months after birth, the second fourteen years after, and the third six months after, and Kennedy suggests two months as a reasonable period to wait for spontaneous recovery. The result in the first case was excellent, but at the date of publication of his paper there had not been sufficient time to judge of the remaining cases.

On the evidence now before us, it may be safely assumed (1) That in the vast majority of cases of obstetrical paralysis the cicatrix will be found in an accessible position at the junction of the fifth and sixth roots; (2) That recovery without operation is highly doubtful, and is certainly not to be expected unless marked improvement occurs within the first two or three months; (3) That if marked improvement does not occur within this period the plexus should be exposed; (4) That perineural cicatrices should be removed and the nerves resected, unless they are free from internal callus; and (5) That the results of such operation are likely to be favourable.

Since the above paragraphs were written, further observations have been made upon the surgery of the brachial plexus. Harris and Warren Low¹⁸ report two cases of supra-brachial paralysis treated by operation. The first was that of a woman who developed suddenly complete paralysis followed by atrophy and degeneration of the deltoid, spinati, teres minor, biceps, brachialis anticus, supinator longus, supinator brevis, pronator radii teres, and both radial extensors of the wrist, without anæsthesia. Sixteen months later the fifth, sixth, and seventh roots were exposed, and it was found that faradic stimulation of the fifth caused movement only in the clavicular portion of the pectoralis major, the triceps, and the extensor carpi ulnaris (?). Stimulation of the sixth root caused vigorous contraction of the pectoralis major, latissimus, triceps, and some of the muscles in the forearm. The fifth root was thus taken to be the only one injured, the lesion being presumably a neuritis due to hæmorrhage. This root was cut across and inserted into a

transverse nick made through the sheath and a few nerve bundles of the seventh root. No function was destroyed by the operation, but sepsis interfered with recovery.

The second case was a traumatic one, with paralysis of the usual fifth root group of muscles, and anæsthesia from the outer side of the shoulder to the elbow and again in the thumb and radial side of the index finger; the pectoralis major, latissimus dorsi, and serratus magnus also appeared to be weakened. The diagnosis was complete rupture of the fifth and partial rupture of the sixth root. On exposing and faradising these roots, the fifth gave only feeble movements in the deltoid, the sixth giving vigorous contractions of the usual muscles. The fifth root was cut across and its distal end firmly sewn into a transverse nick made in the upper edge of the sixth, scar tissue being cleaned away. In the following week anæsthesia of the thumb and index finger entirely disappeared, and a month or two later the deltoid showed some contraction to galvanism, but at the early date of publication no further improvement had occurred.

These two operations are examples of the extension of the method of **Treatment by Anastomosis** which we have indicated as probable in speaking of that operation under the heading "Facial Nerves." A similar procedure was also adopted by Harris and Low in a case of infantile paralysis of the deltoid and spinati, but as in the last case, it is reported too early to allow of motor recovery.

Tubby¹⁹ has dealt with supra-brachial paralysis by a totally different method. He appears to fear the functional result of nerve anastomosis, and leaving the nerves alone, has tried to replace the muscles. A portion of the outer side of the triceps is separated from the olecranon and raised for some three or four inches upwards, and is then brought round and attached to the tendon of the biceps. In two cases voluntary flexion of the elbow was obtained in the course of a few weeks. In a similar manner, the deltoid was replaced in one case by the clavicular head of the pectoralis major, and in the other by slips of both pectoralis major and trapezius. Some power of abduction of the shoulder was regained in both.

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1897; ¹¹*Monats. f. Geburtsh. u. Gynäk.* Bd. xiv; ¹²*Brit. Med. Jour.* Feb. 7, 1903; ¹³*Trans. Clin. Soc.* 1898; ¹⁴Duval et Guillain, *loc. cit.* ¹⁵*Brit. Med. Jour.* May 5, 1900; ¹⁶*Lehrb. der Nerven*; ¹⁷*Glasg. Med. Jour.* Oct. 1900; ¹⁸*Brit. Med. Jour.* Oct. 24, 1903. and unpublished agenda of Neurological Society; ¹⁹*Brit. Med. Jour.* Oct. 17, 1903.

BRADYCARDIA.

Prof. A. H. Carter, M.D., F.R.C.P.

Satterthwaite¹ objects to describe a slow pulse by the term bradycardia. By general consent a pulse below 60 was regarded as "infrequent." According to his experience, the infrequent pulse was most often seen at or about the middle period of life, and was five times more frequent in the male. The infrequent pulse was of two varieties, viz.: (1) Physiological and (2) Pathological. There were two well-known varieties of the first—the infrequent pulse of inheritance, and the slow pulse of pregnancy. The pathologically infrequent pulse was sub-divided into: (a) the paroxysmal, periodic, or temporary variety; and (b) the chronic variety. The latter was uncommon. The physiological variety gave rise to no untoward symptoms—indeed, an increase in the pulse rate often caused discomfort. There was a group of cases that appeared to be dependent upon gastro-intestinal irritation. As the physiological and paroxysmal forms were thought to represent 80 per cent of all cases of infrequent pulse, it was evident that the prognosis was, on the whole, favourable. The prognosis was not so good in the chronic form. Experience had shown that medicinal treatment, having for its object an increase in the frequency of the pulse, was invariably harmful. Even alcoholic stimulants should be used with caution. The infrequent pulse alone should not be treated, but rather the underlying condition.

REFERENCE.—¹*Med. Rec.* Jan. 31, 1903.

BRAIN, (Surgery of the).

Wm. Thorburn, F.R.C.S.

LOCALISATION AND ANATOMY.—Durante¹ contributes an important paper on the functions of the *frontal lobes* of the brain, simultaneously throwing some light upon other vexed questions of localisation. He describes eight cases of operation, in six of which dural or cranial tumours were removed; in one he scraped away cerebral tissue damaged by an old injury, and in one he separated a densely adherent dura mater from a cortical cicatrix. In six cases of lesion of the frontal lobes five presented *psychical disturbances*, two being marked examples of moral perversion. His cases agree with those of Welt, in indicating that affections of the orbital surface of the frontal lobes, and especially of the

first convolution, are peculiarly prone to produce such moral disturbances. Although extensive lesions of the frontal lobes are thus generally associated with psychical affections, this is not always the case, and it is suggestive that the more marked troubles arise only when the disease is sufficiently extensive upon one side to compress the opposite lobe, and that they disappear when the removal of the tumour releases such pressure, even if the lobe of one side be greatly damaged.

One of the cases throws light upon the position of the cortical centres for *hearing*. In a case of tumour of the right side of the brain, there was—before operation—some deafness of the right ear, attributed to pressure upon the right auditory nerve: removal of the right temporal lobe was followed by complete binaural deafness, which lasted for three days and then gave place to normal hearing on the right and partial deafness on the left side. It is concluded that “the cortical centre for hearing is situated in the temporal lobes, that each centre is in relation with both the auditory nerves, and that the direct auditory bundle must be very much less active, and smaller, than the crossed auditory bundle.” Ferrier, Luciani, and Roncali obtained similar results from experimental injuries inflicted upon the temporal lobes. On these and other grounds Durante accepts Ferrier's view as to the crossing of the auditory fibres and the bilateral cortical association of each ear, rather than the opinion of Munk, that the centre is unilateral. The former conclusion is now generally accepted in this country, but the additional evidence here supplied is of interest and value.

In another of Durante's cases was “a notable bony depression” on the right parietal eminence “completely removed from the psychomotor zone and well in the parietal lobe.” *Sense of touch, pain, and temperature* were all abolished in the left upper limb, as were stereognostic and weight sense. All these troubles disappeared within six hours of operation. This is probably the only case hitherto recorded “which clearly proves that the centre, at least for the superior extremity, for these various sensibilities, is situated in the parietal lobe.”

Cushing² has carefully studied the course of the *taste fibres* from the tongue to the brain. It is well known that these fibres run from the posterior third of the tongue by the glosso-pharyngeal nerve to the petrosal ganglion, and from the anterior two-thirds by the chorda tympani to the geniculate ganglion, but their subsequent course is much disputed. Most writers assume that

they pass from these ganglia into the third and second division of the trigeminal, and thence through the Gasserian ganglion to the brain, a view recently strongly supported by Gowers' observations upon cases in which the latter ganglion has been excised. Cushing has very carefully examined the sense of taste in 13 cases of excision of the Gasserian ganglion, both before and after operation, the nature of the tests and the evidence as to completeness of the operation being detailed in the original paper. With the greatest uniformity he finds that resection of the Gasserian ganglion does not produce permanent loss of taste in the anæsthetic tongue. Hence he argues that the taste fibres do *not* pass to the brain by means of the trigeminal nerve. Temporary loss of taste certainly occurs comparatively often, and is attributed to damage inflicted upon the chorda tympani in its association with the degenerating lingual nerve.

Although thus claiming that he has shown that taste fibres do not pass along the trigeminal, Cushing does not define an alternative route, but he suggests that this route may be by the portio intermedia of the facial nerve. Embryologically his view appears probable, and the common observation that intracranial lesions of the facial are not associated with loss of taste is regarded as requiring confirmation, especially in view of the fact that the portio intermedia is sufficiently distinct from the portio mollis to escape injury, even though an intracranial lesion may clinically have produced complete facial paralysis.

TECHNIQUE.—Schaefer³ describes a convenient form of shield to **Protect the Dura** in cutting cranial flaps by Gigli's saw. Between adjacent trephine openings is passed a flat and flexible guard, together with a watch spring; the latter is then attached to the saw and withdrawn so that the saw rests upon the guard, when the bone can be quite deeply cut. Schaefer also recommends a scalp tourniquet of two turns of rubber tubing, held in position by three or four sutures carried through the scalp and tied round the tubing.

Dawbarn⁴ recommends a convenient method of **Covering Defects** in the skull. The material employed is transparent celluloid, carefully freed from nitric acid and made elastic by the addition of synthetically prepared urea instead of camphor, which is apt to cause irritation. Plates of this celluloid, when boiled, can be moulded to the cranial contour, and being transparent and soft can be accurately cut to fit the aperture. The outer table of the skull is cut away beyond the margins of the hole in

the inner table, and the latter thus forms a slight shelf upon which the celluloid plate rests. (The specially prepared celluloid is obtainable from the Arlington Chemical Co., of New Jersey).

Several cases are recorded in which the use of the **Röntgen Rays** has revealed the existence or localisation of cerebral tumours, a good example being one reported by C. K. Mills.⁵ Benedikt⁶ goes further, and claims to be able to detect variations in the permeability of the skull in such conditions as pachymeningitis, unilateral hydrocephalus, and even "shock neuroses"; in the latter he states that painful spots may prove abnormally permeable to the rays owing to some inflammatory process! Pancoast⁷ examined by skiagraphy 8 cases of gross cerebral disease, but the conclusions arrived at were correct in two only; he does not consider that the method is as yet of much value, but anticipates greater accuracy with further experience.

INJURIES.—Larkin⁸ records two cases of cerebro-spinal rhinorrhœa after fracture of the skull. The first was a young man treated for concussion of the brain and a traumatic otitis media; three weeks after the accident the patient appeared perfectly well, except for some frontal headache; he was then found to have a profuse nasal discharge, which ceased after a few days; symptoms of acute meningitis supervened at once, and he died on the 27th day. At the *post mortem* examination were found several cracks in the frontal bone and a fissure of the basisphenoid, through which a probe could be passed into the nose. In the second case apparent recovery from a head injury was followed by watery rhinorrhœa; this ceased after six weeks, but occasional frontal headache remained; nine months later death occurred from meningitis with an intra-cerebral abscess. A fracture of the frontal bone had extended into the fronto-ethmoidal region of the base; the fatal attack appeared to be due to extension from the nose of an attack of influenzal catarrh. A case of Bosworth's is referred to in which cerebro-spinal rhinorrhœa resulted from fracture of the cribriform plate. Larkin thinks that this complication—indicating that the fracture is compound—is probably often overlooked owing to the recumbent position of the patient, and he urges the necessity of disinfecting the naso-pharynx in case of injury of the anterior portion of the base of the skull.

Fleming⁹ describes a number of *post mortem* examinations, showing that in *subarachnoid hæmorrhage* due to fracture of the base of the skull, there is very commonly found retinal hæmorrhage

on the same side as that beneath the meninges, and points out the value of discovering such retinal hæmorrhages clinically, as assisting in the diagnosis—and possibly in the localisation—of fractures of the base.

Tumours.—Starr¹⁰ has made a fresh analysis with more complete bibliography, of 365 cases of operation for the removal of tumours, cases of palliative operation for the relief of tension and its results being omitted. The results appear to be as follows :—

1. Tumour not found	...	...	111	=	30 %
2. Tumour found but not removable	...	...	27	=	7 %
3. Tumour removed but results fatal	...	...	59	=	16 %
4. Tumour removed with recovery from operation			168	=	46 %
			365		99

Such a record is obviously due to the fact that successful cases are recorded in an abnormal proportion. The main causes of failure are found to be imperfect localisation, inaccessibility or infiltrating character of the growth, and as direct results of operation, hæmorrhage and meningitis. The two latter difficulties are constantly becoming less serious for the surgeon, and localisation is becoming more reliable, but the infiltrating nature of many cerebral tumours, and the inaccessibility of many of their positions, remain obstacles to rapid progress. In the case of the cerebellum in particular, Starr finds 50 cases in which the results of the highly difficult and dangerous operation are such that he is inclined to abandon it.

Many isolated cases and smaller collections of personal observations have been recorded, and interesting examples will be found in the papers of Durante and Mills already referred to. Warrington¹¹ records a case in which the existence of a tumour (unlocalised) was diagnosed on the basis of progressive mental failure, headache, vomiting, optic neuritis and hæmorrhages, etc. At the *post-mortem* examination was found *internal hydrocephalus* of obscure origin, which might probably have been at least relieved by tapping the lateral ventricles. Internal hydrocephalus of adults not resulting from acute meningitis or such gross lesions as tumours, is a rare condition well described by Parkes Weber,¹² and it may be very difficult to distinguish from a tumour. Warrington suggests the following diagnostic points : (1) Hydrocephalus is often of long duration with marked intermissions ; (2) The skull may be enlarged ; (3) There are no localising symptoms ; (4) Slight exophthalmos, fine tremor of

the tongue, hands, and lips, and weakness without distinct paralysis of the legs were all present in this case: (5) The results of lumbar puncture may hereafter prove of value, but are at present doubtful; presence of cell elements would suggest a meningeal origin and an internal hydrocephalus.

With regard to *optic neuritis* as the most important of the three cardinal signs of intra-cranial new growth, Singer,¹³ finding some exceptional cases, analyses a large number of observations followed by *post-mortem* examination. Of 88 cases, neuritis was entirely absent in 9 only, while it was well marked in 51. Of the nine cases the average age was fifty-four years, and of the 51 well marked cases the average age was twenty-eight. It is concluded that "absence of optic neuritis in intra-cranial tumour, exclusive of those occurring in the pons, is rare in cases under forty years of age, and becomes increasingly more frequent after that period of life." Possibly this association of age with neuritis indicates that the latter condition is "in some way dependent for its existence upon the healthy condition of the vessel walls."

Epilepsy.—No important advances have been made during the year in the surgical treatment of epilepsy, whether traumatic or idiopathic. This subject was the topic of an interesting discussion at the Medical Society of London, on February 9th, 1903, opened by Risien Russell and Victor Horsley. Russell, speaking only of idiopathic epilepsy, leans to the auto-intoxication theory of its production, but finds no evidence that benefit has hitherto been derived from serums and cultures of organisms. He regards the **Bromides**, and especially the bromide of potassium, as still holding the field among drugs, and he lays stress upon the correction of errors in diet. Horsley has operated on five cases of focal epilepsy not of traumatic origin; in two he found gross lesions (syphilitic and tuberculous), in two there was no discoverable lesion, and in the fifth the removal of a congestive patch of brain substance was followed by the development of general epilepsy. In traumatic epilepsy with general convulsions, he regards surgery as of little avail, in spite of some few successful operations. Traumatic epilepsy of purely focal type, he regards as generally due to injuries which have been more or less septic. When the focus is in the motor region, he regards excision of the brain cicatrix as likely to be followed by cure, while in the frontal region the prognosis is bad, and in occipito-temporal and occipito-parietal cases the results are very doubtful, being worse

than those of the motor area and better than those of the frontal. In all cases he advises excision of the cerebral scar and surrounding damaged tissue. In congenital cases, which are of course mostly traumatic, operations in childhood give very favourable results, but in later life the epileptic habit has been too long established. Horsley also referred to two cases of epilepsy following injury to the spine, in which he performed **Laminectomy**, with one success; of other "reflex epilepsy" he has no experience.

There has been some attempt to resuscitate the operation of **Sympathectomy**, or the excision of the cervical sympathetic, introduced by Jonnesco. Winter¹⁴ notes that cerebral anæmia is the most probable cause of general epilepsy, and argues that it is to be prevented by this operation, which will paralyse the cerebral vaso-motor nerves. Winter therefore operated in nine cases, removing the three cervical ganglia and their intervening cord from both sides of the neck, and he collects a total of 213 cases; of these only 122 were reported at a date sufficiently late to be of value, and of these again, 6·1 per cent. are said to have been cured and to have remained well for three years or more, while others are "improved." No deaths are assigned to the operation itself. Roswell Park¹⁵ suggests that this operation may be useful in cases in which the epileptic seizures can be warded off by inhalation of amyl nitrite, a result indicating that cerebral anæmia is the basis of the seizure.

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BREAST, Diseases of. (See "Mamma.")

BRIGHT'S DISEASE.

Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.

Acute nephritis is said by B. K. Rachford¹ to be a frequent accompaniment of *influenza* in children. The disease, according to him, is very often violent, but where it does not cause death, tends to rapid and permanent recovery. Paganelli² reports a case of *mumps* in a boy aged nine, which was followed by acute nephritis with œdema of the eyelids and extremities. The case ran a favourable course, and the patient rapidly recovered. The association of acute nephritis with mumps has been observed

before, but the cases are of sufficient rarity to make it worth while to note this additional example.

Dr. W. J. Hadley³ has published a case of acute nephritis occurring in a woman aged forty-two, where there was complete suppression of urine which had existed for five days before admission, and continued for three more days, when the patient died. She was bled to a pint, and four pints of saline solution were infused; she was sweated profusely by hot-air baths and hypodermic injections of pilocarpine; but the total suppression of the urine continued. The patient showed none of the ordinary symptoms of uræmia, as there never was any headache, drowsiness, twitching, or mental incapacity, and the vomiting was only trifling and did not prevent a good amount of milk being taken. Her death occurred quite suddenly, while she was talking to her friends. At the *post-mortem* examination the kidneys were found to be enlarged and deeply congested, but no microscopical examination is given. It is also noteworthy that the published report does not contain any description of the state of the brain, so that the case can only be accepted as another example of suppression of urine, without any of the nervous symptoms we usually call uræmia, but which in no degree elucidates this obscure problem.

In the secondary stage of syphilis, albuminuria has been fairly frequently observed, and in some cases the presence of blood and casts has also been noticed. In a case of this kind recorded by Hoffman⁴ it is suggested that the disease is produced by the action of the poison upon the blood-vessels of the kidney, especially upon those of the glomeruli. As a rule these cases terminate in recovery, but two have been recorded by Sutherland and Walker⁵ of fatal interstitial nephritis associated with congenital syphilis, in which the lesion was a diffuse infiltration of the kidney substance invading a large portion of the organ, the uninvaded area apparently remaining quite normal. (*See "Syphilis" and Plate XXVII.*) It is probable that these two conditions are quite unlike, that in children being a gummatous infiltration of the kidney, while that ordinarily seen in adults is nephritis depending upon irritation of the kidney by toxins formed by the disease.

The **Operative Treatment** of chronic Bright's disease, which takes the form either of stripping the capsule, or removing the cortex of one of the kidneys, is not without advocates. Israel continues to practice it in Germany, although only in cases of

unilateral nephritis. In a case reported by Prof. Tyson⁶ the operation appears to have been performed in the case of a child aged nine who had had nephritis for four years following scarlatina, and in which there was extreme œdema of the extremities. After all methods of medication had apparently failed to relieve the condition, and death was impending, decortication of one kidney was performed. Previous to the operation the total amount of urine excreted was only a few ounces in twenty-four hours, while in twenty-four hours after the operation 100 ounces were passed. Ten days after the operation all the œdema and ascites had disappeared, and the patient was passing a normal quantity of urine. Albumin and casts were still present, but in much smaller amounts. Two months after the operation the second kidney was operated upon in the same manner. The patient was kept in bed for three weeks, but on getting up there was such a decided increase in the amount of albumin and casts that she had to return to bed. The case was apparently still under observation.

In the discussion which followed the reporting of this case Dr. Cutler, of Boston, stated that he had had three cases of the kind. The first died at the end of six months; while in the second and third there had been great improvement. Prof. Tyson, in closing the discussion, thought the operation was more suited to children than to adults.

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BRONCHOSCOPY. (*See "Larynx."*)

CALCULUS. (*See "Bladder, Surgery of."*)

CANCER.

K. W. Monsarrat, C.M., F.R.C.S.E.

Local distribution.—Valuable additions to the statistical study of cancer incidence have appeared during 1903; every writer on the subject has, however, to admit a considerable margin of possible error, which unfortunately robs these studies of some considerable proportion of their fruits. Space does not admit of an extended review of these statistics, but mention must be made of those by Wolff,¹ Aitchison Robertson,² Kolb,³ and Pilf.⁴ They give general support to the previous deductions that carcinoma appears to be most common in districts which are specially well watered and wooded. On the other hand they

go to disprove the association of the disease with any particular geological formation.

Anatomical distribution.—De Bovis⁵ concludes, from statistics derived from various countries, that (1) Cancer of the rectum appears to be about stationary; (2) Cancer of the uterus shows a sensible decline; (3) Cancer of the breast shows a still more marked decline; (4) Cancer of the mouth and surrounding parts is perhaps on the increase; (5) Cancer of the extremities has diminished; (6) The increase is in consequence due in great part to the increase of visceral cancer.

Riechelmann⁶ gives an analysis of 711 *post-mortem* examinations of cancer from Hansemann's clinic between April, 1890, and June, 1901, a summary of which gives the following figures:

Integument	..	...	..	40
Urogenital apparatus		..	..	115
Digestive	..	..	..	508
Respiratory	..	..	..	34
Others	..	..	..	14

As a comparison we have the table given by Hüffel,⁷ from the *post-mortem* records in the pathological institute of Munich. During the years 1889-1901 there were 12,609 sectiones cadaverum, of which 1147 were on cases of carcinoma. It must of course be remembered that these are cases of fatal cancer, and their analysis is bound to give figures which do not represent actual cancer incidence; the following organs stand highest in the list:—

Stomach	351	Œsophagus	50	Gall Bladder	19
Uterus	255	Pancreas	39	Peritoneum	17
Rectum	97	Ovaries	33	Tongue	12
Mamma	79	Liver	32	Prostate	9
Colon	78	Urinary Bladder	21	Vagina	9

Recent operation statistics are of high interest as showing what the more thorough and extensive attempts at eradication, now used, can promise the patient. Labbard⁸ contributes a valuable paper on this subject, drawn from the literature and from unpublished material from the University Clinic of Rostock and Königsberg, on the operation results of cancer of the mamma, rectum, tongue, lips, and other organs. Late recurrences (later than three years after operation) were noted as follows:—

Of 2107 Carcinoma	Mammæ	in 48	= 2·3 %
Of 491 ..	Recti	in 22	= 4·4 %
Of 1300 ..	Labii et faciei	in 33	= 2·5 %

He found that in the greater number of cases recurrence took place in the scar and its vicinity.

Papers by Bryant⁹ and Marmaduke Sheild¹⁰ deal with cancer of the breast from the same point of view. Bryant gives details of 46 cases, 25 of which had recurrence. In 15 this occurred in the scar, in 10 cases in the second breast. The latent period was very variable; in one half of the cases recurrence took place within five years, in the other half after five years. Marmaduke Sheild deals with 60 cases. In 39 of these recurrence took place; in 20 during the first three years, in 19 after this period.

Stölzner¹¹ gives the results of 125 cases operated on from July, 1892, to December, 1901. Of these 51 died of recurrence and metastases.

In the first year died 21				Local recurrence 10		
„	second	„	16	„	„	12
„	third	„	4	„	„	1
„	fourth	„	5	„	„	1
„	fifth	„	3			
„	sixth	„	—			
„	seventh	„	2			

There remained free from recurrence 52 = 41·6 per cent. These results are good; that they are so Stölzner ascribes to the extent of the operations performed.

Statistics relating to uterine cancer are given by Glockner.¹² Of 974 cases in Zweifel's clinic (1887-1901), 260 (26·6 per cent.) were operated on. The methods of operation were as follows:—

Vaginal Total Extirpation	...	...	225 = 86 %
Abdominal Extirpation	...	...	4 = 1·5 %
Combined Method	...	...	24 = 9·2 %
Sacral and Parasacral Route	...	...	7 = 2·7 %

The mortality after operation was 8·4 per cent. Freedom from recurrence five years after operation was taken as a basis, and of 132 cases investigated, 47 were regarded as cured on this ground, and in 87 recurrence took place.

Pathology.—A very valuable contribution to the subject of classification was made by Adami¹³ in 1902. It has been recognized by pathologists for some time that the methods of classification in use are unsatisfactory, in that they involve overlapping, and in that it is difficult to make many tumours fit into any of the adopted schemes. For many years, since Waldeyer, the most popular basis of classification has been that founded on the three primitive cell layers, epiblast, hypoblast, and mesoblast; but this classification has involved the bringing together into

groups of tumours histologically unlike, and conversely, the separation of types which in structure and general characters were similar. In consequence there is now a general tendency among pathologists to surrender any embryogenic significance in classification, and simply to divide tumours into groups according to their general structural characters, or even to give up any real classification, and to describe new growths according to their histology and topography.

Adami would revert to an embryological classification, but not on the old basis of epi- hypo- and mesoblast, but on that of a division of the primitive cell layers and the tissues to which they give rise, into *lining membrane tissues* and *pulp tissues*. The lining membrane tissues he terms *lepidic*, the pulp tissues *hylic*, and the new growths originating from each, *lepidomata* and *hylomata* respectively. The details of this classification must be studied in the article in question; according to its terminology all carcinomata are atypical lepidomata.

Mr. G. L. Cheate,¹⁴ in a paper read before the Pathological Society of London, drew attention to apparent relationships between carcinoma and nerve or trophic areas. He emphasised two points. First, that there are a proportion of cases which show a marked relationship between the spread of the primary focus and the distribution of nerves as atrophic areas. Arising out of this observation is the practical issue that the extent of these areas should be taken into consideration in marking out incisions when removal of cancer is contemplated. Secondly, that there is reason for believing that the incidence of cancer within a nerve area is not a fortuitous circumstance, but that it may be due to the direct or indirect nervous influence over that area.

Several series of observations have appeared of late on the *cytology of the blood* in cases of carcinoma. All go to confirm previous researches in the fact that no changes of diagnostic value are constantly present in cancer cases.

Price-Jones¹⁵ examined the blood of 30 cases of malignant growth, and found the results very variable. The examinations revealed no special characteristic which could be considered specific.

Marcotte¹⁶ finds that increase of leucocytes is not constant in cancer, being absent in about a third. Increase of the mononuclears is most constant; a proportionate increase of the polynuclears cannot be held to support a diagnosis of malignant

disease; diminution of hæmoglobin and red cells is constant. He thinks the anæmia of malignant disease is always due to some secondary infection of the tumour.

Mouisset and Tolot¹⁷ look upon the loss of hæmoglobin per red cell (*valeur globulaire*) as a prominent feature of gastric cancer. In this condition they found that leucocytosis was a late sign, and usually to be ascribed to secondary ulcerative processes; the form of the leucocytosis they found of no diagnostic importance.

Kast¹⁸ describes a case of universal carcinosis, with deposits in the bone-marrow of ribs, vertebræ, etc., in which an excessive hyperleucocytosis was the most prominent feature.

Blumenthal¹⁹ endeavours to summarise the numerous researches on the *urine* in carcinoma. A large number of chemical substances in the urine have been from time to time associated by various observers with cancer. Blumenthal has found a consensus of opinion on the following points: An enormous indicanuria points to carcinoma of the stomach; albumosuria and the diazo reaction to ulcerating cancer; lactic acid to liver cancer; sugar to pancreatic cancer or cancer of the nervous centres; marked increase of uric acid in proportion to total nitrogenous excretion, to carcinoma of the nuclein-rich organs, liver, pancreas, etc. He expresses the opinion that valuable information on the site and stage of carcinomatous processes will probably be forthcoming from future researches on metabolism in these cases.

The association of carcinoma with other recognized disease processes is a subject of very great importance, and one from which it is not improbable that valuable information on etiology may be derived. Certain supposed relationships between cancer and *tuberculosis* have been discussed by many, but results are not conclusive. The question of the association at present has arrived at the following stage. The two conditions are rarely associated; there is no reason to believe that this fact is due to any cause other than that individuals susceptible to tuberculosis are, as a rule, *somewhat insusceptible* to cancer, and *vice versa*. Occasionally tuberculosis is associated with cancer in such a manner as to suggest the sequence of cause and effect.

ETIOLOGY.—It is convenient to divide the literature of cancer etiology into the following: (1) General theoretical considerations; (2) The theoretical discussion of individual factors; (3) Histological observations; (4) Experimental observations.

In actual scientific value, generally speaking, the order of the literature is the reverse of the above.

1.—Borst in his text book *Die Lehre von der Geschwülsten*, holds that the parasitic theory of carcinoma is in the first place unproved, and in the second place generally inconsistent with the ascertained course of the process.

Lubarsch²⁰ considers that between all the true neoplasms and the infiltrating new growths, there exist so many similarities and relationships, that it is impossible to conceive of the one having a parasitic origin without the other; that we at present know of no parasite which is capable of producing true neoplasm; that there are numerous true neoplasms, which histologically and genetically are different from carcinomata, but exhibit the characteristics of destructive invasion, metastasis, formation, and cachexia, in which a parasitic origin is not entertainable.

Feinberg,²¹ whose own work has consisted entirely of histological investigation by various methods, gives an elaborate and detailed description of the parasite, classes it among the sporozoa, and considers it the active cause of carcinoma. In his classification of the organism he relies on certain nuclear characteristics, which he considers peculiar to the unicellular animal organisms. Feinberg's work does not include original observations which sensibly advance the etiological problem.

O. Israel,²² while considering cancer as essentially of the nature of a reaction phenomenon, does not admit the likelihood of there being any specific cancer organism. "All the known influences which are injurious to lining (epithelial) cells and so stimulate proliferation, are capable of causing cancer and originating infiltrating new growths, according as they act upon cell types which are capable of variation, exert their activity over a long period or frequently, and are of such a nature that they give rise to new growth capable of overcoming the resistance of the connective tissues to invasion."

Monsarrat²³ in a paper dealing with this aspect of the question, writes:—

(a.) Cell activity and cell type must always be the resultant of bio-chemical reaction, of the principles of which the researches of Ehrlich and others have lately enabled us to obtain some information.

(b.) Cell proliferation as a form of cellular activity is always the resultant of such reaction. When it takes place as the result of increased availability of normal food material, the new cells

produced conform to the type of the parent cells. When it follows the action of assimilable materials of abnormal constitution, new cell types are evoked, variants on the type of the parent cells.

(c,) Cell proliferation of the latter type takes place in certain micro-parasitic infections.

(d,) The new cell types thus evoked exhibit various degrees of instability.

(e,) In the granulomata (*infectionsgeschwülste*) their stability is considerable; in certain growths which result from infective agents (for example, condyloma), the equilibrium of the new type appears to be stable.

(f,) In the so-called true tumours, cell types arise as variants on the normal cells of the organ or tissue of origin. The ways in which such cell variants may be evoked is not discussed, but that they may result in some cases from the action of micro-parasites is a reasonable view.

(g,) These cell types are stable; their stability is due to the capacity of the particular variant to attach to itself and assimilate material in conformity with its type.

(h,) In the simple tumours they are only locally stable, and are not immune to reactionary influences outside the tissue of origin and the normal relationships of parenchyma and connective tissue.

(i,) In the malignant growths they possess a wide range of stability and immunity, and the degree of this is the measure of their capacity to form metastases; while local infiltration, the other histological characteristic, is dependent on the principle of chemotaxis, the cells extending in those directions in which their variant and aberrant bio-chemical affinities enable them to annex material conformable to the building up of their characteristic type.

2.—Foulerton²⁴ discusses the results of the work on the causation of cancer published in the preceding three years; his criticisms being for the most part confined to the parasitic theory. He considers that there is no satisfactory evidence that a specific parasite for carcinoma has yet been found, and that so far as theoretical considerations go, the balance of probabilities is against the theory.

Behla²⁵ has given up the idea that the *plasmodiophora brassicæ* may be an active cause of carcinoma, and publishes further researches on certain epithelial parasites, with especial

reference to the class *chytridiaceæ*. These researches await confirmation.

Boström²⁶ discusses traumatism and parasitism in relation to cancer, coming to the following conclusions: A single trauma to previously healthy tissues never gives rise to malignant growth, only when it affects tissues already disposed to, or one in which cancer is latent. Long continued or frequent irritation, and chemical and thermal injury, usually give rise to chronic inflammatory, ulcerative, or scarring processes. In the course of the latter, not infrequently, cell groups are isolated which form foci of tumour growth. Whence, however, comes the first stimulus to the multiplication of the cells concerned? Boström thinks that the parasitic theory offers the most probable explanation. He considers, however, that the parasitic theory must stand or fall by the interpretation of metastatic growth; at present there is unanimity on there being a distinct biological difference between metastasis in cancer and in infectious diseases. The examination of the theory of metastasis Boström considers the crux of the matter.

3.—The nature of the cell inclusions of carcinoma continue to form a subject of discussion. Nöfske²⁷ answers in the negative the question whether these are to be considered specific cancer parasites, on the following grounds: their number shows no proportion to the activity of the cancer growth: he found similar bodies in a case of gummatous pneumonia, in the cells of a senile mamma, and in three benign adenomata of the mamma: they show a marked inconstancy of size and form.

Greenough²⁸ gives the results of 97 observations, in part of normal, in part of pathological tissues. His conclusions are as follows: (a) Cell inclusions of constant type were found in all cases of cancer of the breast; (b) They were found also in non-cancerous diseased tissue of the breast; (c) They were not found in epithelioma or sarcoma; (d) Their form, their staining reactions, and their situation indicate that they are the product of the secretory activity of the epithelial cells; (e) There is no proof of the parasitic nature of these bodies.

Apolant and Embden²⁹ have investigated the presence of these bodies in a large number of carcinomata in animals; they arrived at conclusions somewhat similar to those of Nöfske and Greenough; they consider them cell-vacuoles enclosing degenerate protoplasmic remnants.

Spirlas³⁰ reports some experimental observations on the same

subject; he first injected cancer cells into the peritoneal cavity and examined the peritoneal fluid after varying periods: in from 24 to 50 hours after the injection he found numerous typical "Plimmer's bodies" in the lymphocytes. He also found the same after injection with material from the club root of cabbage (plasmodiophora). Thirdly, he found them after injecting in the same way spermatozoa, sarcinæ, liver cells, and sterile salt solution. According to Spirias the "bodies" are leucocytes taken up and digested by the lymphocytes, and digestion vacuoles in which the remains of the leucocyte give the appearance of a nucleus.

All these observations on the nature of the "cancer bodies" are therefore antagonistic to the idea that they are either (a) specific for cancer tissue, or (b) of a parasitic nature.

Olshausen³¹ reports a series of highly interesting cases of **Implantation** 'metastases. (a) Two years after extirpation of a carcinoma of the ovary, an inoperable carcinoma of the abdominal wall in the laparotomy scar; (b) Two years after double ovariectomy for tumour (? cancer), a carcinoma of the abdominal wall, the size of a walnut; (c) Five and a quarter years after extirpation of a glandular cystoma of one ovary, papillary cystoma of the other ovary and carcinoma of the abdominal wall; (d) A double ovariectomy for papillary cystoma, a large cancerous tumour of the abdominal wall seven and a half years after; (e) A papillary cystoma metastasis in the abdominal wall seventeen years after ovariectomy for benign ovarian cystoma; (f) A psammocarcinoma of the abdominal wall twice the size of a child's head twenty-one years after extirpation of a "probably malignant" ovarian tumour.

Olshausen considers his cases demonstrate the fact that in rare instances malignant and more rarely benign tumours occur in the abdominal wall as a consequence of implantation in the course of laparotomy. The long latency of four of these cases is explained on the ground that a non-vascular scar offers little opportunity for the development of implanted cells.

Cohn³² describes a case of carcinoma of the upper lip which followed a carcinoma of the corresponding portion of the lower. He finds only four similar cases recorded.

Hellendall³³ records a case of carcinoma of the uterus with an apparent implantation metastasis in the vagina; examination of this metastasis showed it to be due to retrograde extension of the carcinomatous growth by way of the veins and lymph

channels. Hellendall believes that most, if not all, of the so-called implantation metastases of the vagina in uterine cancer do not owe their existence to implantation at all, but to an extension similar to that found in his case.

4.—Loeb, v. Leyden and Blumenthal, and Jensen have recorded experimental work on tumour transplantation. Loeb³⁴ has previously recorded researches on the transplantation of a thyroid sarcoma of the white rat, which were stopped by a secondary septic infection of the tumour. He now relates four similar cases. (*a*) A rat with abdominal adeno-carcinoma; six transplantation experiments gave negative results; (*b*) A rat with adeno-sarcoma of the thyroid, with a metastasis in the lung. Two rats and one guinea-pig were injected intraperitoneally with cyst contents without results; six fragments were transferred to subcutaneous tissue, peritoneum and scrotum; after two to three weeks the fragments began to grow. (*c*) A rat with adenoma mammaræ; a piece of the growth was transferred under the skin covering the other mamma, both original tumour and the graft increased rapidly; attempts to transfer to other rats were unsuccessful; (*d*) A rat with thyroid sarcoma successfully transplanted. Certain structural peculiarities in the transplanted sarcomata were constantly reproduced in the grafts after eight to eleven generations. Pieces which were kept in ice for five days were successfully grafted.

Von Leyden and Blumenthal³⁵ report experiments in attempted transplantation of human cancer to animals; in attempts to produce a cytolytic serum; and in the injection of such serum and of human cancer juice into cancer patients. These experiments appear inconclusive, and in fact not conceived in such a way that any information could be extracted from them.

Of greater scientific interest and value are the researches of Jensen.³⁶ He successfully transplanted a carcinoma of the white mouse through a long series of generations; in all 844 mice were inoculated, of these 232 died within fourteen days after inoculation. Of the remainder, 274 were injected with material broken up in the mortar with salt solution, and in 121 tumours developed; in 338 a small piece of growth was inserted beneath the skin, and in 128 growths developed. In the first few days after injection the material inoculated dwindled in size; in about a fortnight new nodules appeared and gradually grew, until in some cases the growth was greater in weight than the rest of the animal. Immunity was in some cases shown by

whole families of mice. From the white mice ten specimens of the common grey mouse were inoculated; one positive result only was obtained. From this one case further transplantations to grey mice were more successful; of 84 attempts, in 27 a positive result occurred. Negative results followed injection in four other species of mice, in white rats, guinea-pigs, rabbits, goats, and ducks. No cultures of blastomycetes were obtained from the growths. The vitality of the tumour cells was studied under a variety of conditions; their resistance to heat and cold, light, drying, and antiseptics. If kept at the body temperature they retained their vitality for only twenty-four hours; summer heat and the low temperature of 1° to 3° C. increased their resistance. Five minutes exposure to 47° C. and a few minutes to 20° C killed the cells. Intensive light also killed them, but acted only superficially. Partial drying was also destructive, and a .25 per cent solution of carbolic acid destroyed them in five minutes. This low resistant capacity is further evidence that no vegetable parasite was concerned in the tumour growth.

Jensen also discusses the production of active and passive immunity against the tumour cells. His researches seem to show that it is not only possible to produce an active immunity in healthy mice, but that it is also possible, in a mouse already infected with tumour growth, to produce an active resistance by treatment with tumour-cell emulsion, and so arrest the growth and produce absorption of the tumour. The production of a serviceable passive resistance by inoculation with serum from another animal injected with the tumour cells, was on the contrary unsuccessful.

During the last year Bosc³⁷ and Borrel³⁸ have studied certain infective disorders which in the anatomy of the lesions produced bear a close resemblance to epithelioma. The credit of first describing the characteristics of these conditions is due to Bosc, who in fact first drew attention to the matter in 1901. In histological studies of the pustules of variola and vaccinia he showed that the essential lesion consisted of an epithelial proliferation, infiltrating and disorientated, with the formation of epithelial perles. These changes are very pronounced in the variola of the sheep (*la clavelée*). The study of the lesions showed that they were characterised by an epithelial proliferation which reproduced the typical characters of epidermal cancer. The lesions of internal organs were also found to be characterized by epithelial proliferation assuming the type of adenoma and

adeno-epithelioma. In the mamma, lesions may occur in this disease which reproduce the characters not only of epithelial proliferation characteristic of adenoma, but epitheliomatous new growth, both typical and atypical. Bosc states the following conclusion. There exists a condition which must be histologically described as variolous (*claveleux*) epithelioma, and since the variolous virus produces a general disease, and provokes in all parts of the body to which it penetrates a proliferative reaction of neoplastic character, this epithelioma must rank as a parasitic epithelioma, and opens a new class of morbid conditions.

The investigations of Borrel have followed the same lines, but he prefers to describe the variolous lesion as an epitheliosis. He considers that true epithelioma differs essentially from this epitheliosis in that the metastases in the former are directly related to the primary growths. The comparison of the two conditions only permits, he says, of the statement that the epithelial proliferation of cancerous tumours is not an exceptional reaction without analogy in known infective disorders, and this fact encourages the search for a cancerous virus.

Hemmeter³⁹ records experiments on dogs, in the course of which he successfully produced carcinoma on the basis of a gastric ulcer in four out of ten dogs by inoculation with carcinoma, and in a second series of ten dogs five developed carcinoma around the edges of the gastric ulcer after injection with a cell-free extract of carcinoma. As, however, he states that he does not wish to be quoted as claiming that he had actually produced cancer experimentally, it is not possible to estimate the degree of importance to be attached to his observations.

Monsarrat⁴⁰ records further researches on the bacteriological examination of carcinomata of the breast, and reports four further successful isolations of the characteristic organism previously isolated in 1899. It is shown that this organism has a life cycle, in which, in addition to a vegetative form of reproduction (budding) there is a type of reproduction by a method of spore formation, the details of which have not been fully investigated. The organism was isolated in each case from a rapidly-growing cancer in a young woman. It proved pathogenic to guinea-pigs, rabbits, and dogs, but the histology of the lesions produced are to be described in a later paper. While it is certain that this organism belongs to the vegetable kingdom and is related to the lower fungi, its exact classification is not attempted pending the determination of its complete life history.

Serum Therapeutics and Carcinoma.—It has already been noted how Jensen in his transplantation experiments was able to produce a serum, by inoculation of tumour cells into other animals, which caused diminution and finally disappearance of the tumour growth. The observations of v. Leyden and Blumenthal in the same direction have also been alluded to. In an article on the cytotoxins of the blood serum, Sachs⁴¹ considers the question of the production of serum antagonistic to cancer. The question of the production of such a serum, cytotoxic in nature, that is to say specifically toxic to the carcinomatous stroma, was first raised by Metchnikoff and v. Dungern. Unfortunately most of the cytotoxic sera have not proved absolutely specific. A mammary-epithelium-immune serum introduced into the blood stream destroys, in addition to carcinoma cells (the descendants of mammary epithelium), also ciliated epithelium, for example in the trachea, erythrocytes, and possibly other cell types. The avidity of epithelium-immune serum for epithelial cells is however much greater than for other cell types, and herein lies the possibility of obtaining a serum with activity localised to carcinoma.

Theoretically there are three alternatives in regard to this immune-serum production. Firstly, a cytotoxic serum may be produced by the inoculation of tumour cells into animals, and the recovery and injection of the serum of these. Secondly, a cytotoxin may be produced by the injection of cancer cells (or other cells) derived from one individual into another individual of the same species (*e.g.*, human); such a cytotoxin would be a so-called isocytotoxin. Thirdly, a cytotoxin may be produced by the injection of the cancer cells of an individual into the same individual; such a cytotoxin would be an autocytotoxin. Ehrlich and Morgenroth found that an autohæmolysin is not producible, possibly therefore an autotoxin to cancer cells is also unobtainable. Metchnikoff, however, produced an autocytoxin by the injection of guinea-pigs with their own spermatozoa, so that there is no general rule against the development of autocytoxins.

Some interesting though inconclusive experiments on this matter have been lately recorded, in addition to those already noticed. Hoyton⁴² records the treatment of an inoperable carcinoma of two years growth with the serum of a dog which had received injections of material derived from another carcinoma. The injections caused no symptoms in the dog. The

serum of the dog was injected into the patient daily for a month. No change took place in the growth itself, but some glandular growths diminished in size. In a second case Hoyton used for injection cancer-juice mixed with saline solution; in this case the growth of the tumour was arrested, the glands diminished, and pain was relieved. In both cases death put an end to the treatment.

Seeligmann⁴³ used material from a carcinoma of the uterus for injection in inoperable cases, after testing its harmlessness on rabbits and other animals. In many cases of uterine cancer improvement both subjective and objective occurred, the hæmorrhage ceased, and the discharge decreased. None of the cases survived, they were all in the later stages of the disease.

Wlaeff's⁴⁴ serum, prepared from cultures of blastomycetes or ferment extracts of cancerous growths, has apparently obtained a small degree of success. Berger and Regnier placed a number of cases of inoperable cancer under his care; they kept these cases under observation. They were not able to note cure in any case, though the patients were always greatly improved by the treatment and felt benefited by it. The tumour appeared to diminish somewhat in volume. A cancer of the rectum exhibited a lessened tendency towards hæmorrhage, and several cancers of the tongue showed less salivation and œdema. There was a decided diminution in the amount of pain, several patients gained weight, and in others the progress of emaciation seemed to be ameliorated. The action of the serum appeared to be transitory.

A variety of preparations have been of late recommended in cancer, none of which call for particular notice. One of those for which most has been claimed is the **Cancroïn** of Adamkiewicz,⁴⁵ and temporary benefit has apparently followed its administration, but many negative observations have also been recorded.

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CANCER, (Local Treatment . *Priestley Leech, M.D., F.R.C.S.*

Czerny and Trunczek introduced the treatment of malignant tumours by the local **Application of Arsenic**; the latter¹ gives further details of the method, which might be tried in cases which are unsuitable for operation, and in which the X-rays are no good [as far as our own personal experience goes the X-rays are only of permanent use in rodent ulcer].

In carcinomatous ulcer the surface is cleaned with boracic acid, or peroxide of hydrogen lotion, until slight hæmorrhage is produced. When this has ceased the arsenic mixture is painted over the raw surface, and left to dry; no dressings are applied. The wound soon becomes moist and moderately painful, and the following day it is covered with a scab. If there is no surrounding œdema the ulcer is painted daily with the mixture; if œdema occurs no painting is done until the œdema has disappeared. The scab, at first superficial and brown, becomes daily thicker and darker, and extends over the whole ulcer until the entire growth is necrosed. Finally, a line of demarcation forms, and the tumour can be removed by snipping through any remaining adhesions.

The arsenical mixture consists of 1 part of **Arsenious Acid** in 75 parts of absolute alcohol and 75 parts of distilled water. As the necrosed mass becomes thicker, the strength is increased to 1 part of arsenious acid in 100 or even 80 parts of spirit and water. The great advantage of arsenic over other caustics is that the cells of carcinomata and sarcomata have a special affinity for it—are in fact “arsenophile,”—so that although the new growth is destroyed, the healthy tissues are spared.

After the whole mass of tumour has been cast off it is possible to determine whether the whole of the disease has been removed by painting with the arsenic mixture, or better still by a 1 in 250 solution of **Potassium Arseniate** in equal parts of absolute

alcohol and water. If a superficial yellowish green slough which can be readily removed without hæmorrhage is present the next day, all the growth has probably been removed; but if a dark adherent slough forms over the whole or portions of the ulcer, and cannot be removed without hæmorrhage, the treatment must be continued until it has separated, and the application of arsenic produces no further characteristic necroses.

Owing to the affinity of the cells of malignant tumours for arsenic, it matters not how small the area of cutaneous ulceration may be compared to the growth beneath; the whole mass necroses, and is eventually cast off. Hence in cases of non-ulcerated superficial cancers it is sufficient to snip off a small piece of overlying skin, and after hæmorrhage has ceased to apply the arsenical mixture to the wound every day.

Trunczek claims that the affinity between arsenic and the malignant growth results in the tumour being more radically removed than is possible with the knife, and that recurrence is seldom if ever seen. The method is only suitable for cases in an early stage, when the glands are not implicated; and the growth must also be in a position to be easily reached, such as the skin, lips, and buccal mucous membrane. Even in cases of epithelioma of the mouth, toxic symptoms have not been seen, when care is taken to prevent the solution coming in contact with healthy mucous membrane.

REFERENCE.—¹*Wien. Med. Woch.* May 11, 18, and 25, 1901; *Brit. Med. Jour.* July 27, 1901.

CANCER, of Breast. (*See* "Mamma.")

CANCER, of Larynx. (*See* "Larynx.")

CARIES.

Priestley Leech, M.D., F.R.C.S.

Boyer¹ uses the following plan for treating cavities in the tibia and calcaneus. After removal of the sequestrum and of any sinuses there may be, the cavity is well scraped, its edges rounded off, and then enough bone must be removed and the flaps undermined so that they will meet across the cavity. The flaps are brought across by sutures which pass over a roll of iodoform gauze, which presses the flaps against the bone surface beneath. The first dressing may be left in position for eight or ten days.

Mosetig Moorhof² describes the following method of **Filling in Cavities** in bones. An essential to success is getting an aseptic cavity; every particle of diseased bone and tissue must be

thoroughly removed. The operation is conducted under hæmostasis with the elastic tourniquet, and then the cavity is dried by thorough sponging and the application of filtered, dry, cold, or preferably, heated air. This is an essential step, and requires the same care as is needed in filling the cavity of a tooth. When the entire bony surface is clean, white, and shining, the filling is slowly poured in, in such a manner as to exclude all air bubbles.

The composition of the filling is as follows : iodoform 60 parts, spermaceti and oil of sesame of each 40 parts. These are placed in a sterile flask, and slowly heated in a water bath to 80° C. This temperature is maintained for fifteen minutes, and then the mass is allowed to solidify under constant shaking in order to keep the iodoform emulsified. When cold it forms a solid mass, which is liquefied by heating to 60° C. before using. The bony cavity is filled with this, and after a delay of several minutes, to permit congelation, the soft parts are sutured, leaving one or two small openings for drainage. A sterile dressing is applied without great pressure, and only then is the tourniquet removed. In 120 cases treated in this way no local reaction or disturbance of healing was observed.

REFERENCES.—¹*Centralb. f. Chir.* May 9, 1903; ²*Ibid.*

CARIES, (Dental).

J. G. Turner, F.R.C.S.

Prevention of Dental Caries.—D. D. Smith¹ finds that by inducing his patients to return to him once a month after he has once thoroughly scaled and cleaned the teeth, and letting him polish them with orange wood charged with pumice powder (using manual power only) he greatly reduces the further inroads of caries, and benefits or cures such cases as persistent stomatitis, or chronic pharyngitis and tonsillitis.

The *Lancet*² calls attention to the increase of dental disease. In this country 86 per cent of children have defective dentition, while on the continent the percentages are as high as 96 and 98.75. The deciduary teeth are very prone to caries, and children of three and a half years often show several deciduous molars rapidly decaying. Thus, at a most important growing period, every obstacle is put in the way of good nutrition. Experience shows that in children seen early, filling the teeth is successful in combating this terrible excess of caries. In children so treated there seems less liability to the development of adenoids and other ailments.

Caries is produced solely by external causes, but the increase

is said by many to be due to a more favourable soil being provided by less strongly formed teeth. By others it is put down to the elimination of all fibrous elements from food stuffs, and to methods of food preparation which leave only pulpy materials that readily lodge in every crevice and undergo acid fermentation. The general practitioner can do much to combat this increase in dental caries, by inducing parents to rear their children at the breast, and to get their teeth attended to from the earliest age. Mr. Kingston Barton, as a result of twenty years' observation, is of opinion that caries is distinctly less prevalent among breast-fed children. Dr. T. Frick³ after more than ten years' observation, is sure that caries is more frequent among children who have been reared on sterilised cow's milk than among breast-fed. He thinks sterilised milk or other artificial preparations produce a degeneration of the tissues, and that the teeth show it by a form which allows *débris* to lodge between them more readily than normal, and by a diminution of the amount of salts deposited in their formation. Experiments on animals have shown that of six dogs, three nourished by the mother had good teeth; of three nourished on milk and bouillon, one died soon, and the other two erupted badly developed teeth like the rachitic teeth in man.

REFERENCES.—¹*Med. News*, Feb. 7, 1903; ²Nov. 15th, 1902; ³*Congrès Dent. Inter.* 1900.

CAROTID ARTERIES, (Temporary Occlusion of).

Priestley Leech, M.D., F.R.C.S.

Dr. George Crile¹ has published an experimental and clinical research on **Temporary Occlusion** of the carotid arteries. Treves some time ago used and suggested temporary ligature by kangaroo tendons in certain operations where hæmorrhage is likely to be severe. Crile made experiments on dogs in which one and both carotids were temporarily occluded, by a clamp with its blades adjusted by means of a set screw. Pieces of indiarubber tubing were stretched over the blades to lessen the risk of damage to the artery. Twenty minutes prior to making the incision a hypodermic injection of one hundredth of a grain of **Atropine** was given where the vagus or superior laryngeal was likely to be affected, to prevent their irritation affecting the heart. Where blood might enter the pulmonary tract the Trendelenburg posture should be adopted. This also possesses the further advantage of partly compensating by gravity for the lowered cerebral blood pressure. Crile reports a series of eighteen operations performed

between 1897 and 1901, on patients ranging in age from seven months to sixty-nine years; in ten of which both common carotids were temporarily occluded; in five one common carotid; and in three one external carotid. In fifteen out of the eighteen cases recovery ensued; in the other cases the operation was recovered from, but the patients died respectively from hæmorrhage on the thirteenth day, from pneumonia on the seventh, from cerebral softening on the tenth. The second and third cases occurred in alcoholics, and in no case could death be attributed to the temporary closure of the arteries.

The advantages he claims for this procedure are: The smaller quantity of anæsthetic required, lessening of the time of operation, a clear field of operation, diminution of the loss of blood, lessened danger from hæmorrhage into the respiratory tract, and ease and speed of procedure. One noticeable point is the fact that in two cases, owing to the irritation induced by handling of the vagus, which had been insufficiently paralysed by atropine, signs of cardiac inhibition occurred; but the packing of the nerve with cotton saturated with a 2 per cent solution of **Cocaine** caused prompt cessation of the symptoms, which did not recur, even though the nerve was later subjected to more severe handling than before.

REFERENCE.—¹*Ann. Surg.* April, 1903.

CATARACT.

A. Hugh Thompson, M.A., M.D.

Wherry¹ of Cambridge, suggests that in some cases of ordinary senile cataract, sugar in the diet may tend to its more rapid growth. He is therefore accustomed to recommend the use of **Saccharin** or **Saxin**, in cases of early cataract with useful vision. The analogy with diabetic cataract is not, it seems, sufficient to justify this practice, and if it were, it would be necessary to restrict starchy food as well. Cataract is no doubt an expression of malnutrition of the lens. In diabetic cataract this is connected with general malnutrition, but in ordinary cataract this is not so, or if so the special cause of malnutrition must be considered in each particular case. In support of his practice, however, Wherry refers to certain experiments on fishes; sugaring the water in which they live, it seems, produces cataract.

Elliott² gives analyses of three separate series of cataract operations performed in the Government Ophthalmic Hospital, at Madras—more than 800 in all. All complications occurring either before, during, or after operation, are faithfully recorded.

His experience tells strongly in favour of extraction with iridectomy, as opposed to simple extraction, on account of the danger of prolapse of the iris.

Bottle-finisher's Cataract.—The extent to which bottle-finishers are subject to cataract, and the nature of the disease, are commented on by William Robinson³ in an important paper. Out of 75 hard cataracts operated on in the Sunderland and Durham County Infirmary, in one year, no less than 18 were in bottle-finishers. The work involves exposure to the most brilliant light and intense heat of a furnace for about three seconds, some five times every two minutes, and the total time in each week during which the exposure lasts is about five and a half hours. This is longer than in any other trade known to the writer. The age at which the men generally begin this sort of work (which is highly skilled)—between twenty-five and forty—is also more favourable to the development of cataract than a younger age would be. Practically both eyes are always affected, and whereas ordinary senile cataract is not often seen under the age of fifty, in the case of bottle-finishers it often begins considerably earlier. The progress is slow, so that the victim is often able to continue his work some years after the appearance of the first opacities, at any rate with the help of dilated pupils. The cataract always commences at the posterior pole of the lens, and probably involves the posterior capsule. It is, however, not a secondary cataract, but a purely local disease of the lens. It is undoubtedly due to the great light and heat of the furnace, and the theory put forward to explain the fact that it is the posterior pole which first suffers, is that here is the nodal point where all the principal rays of the various pencils falling on the lens cross and pass without refraction. The contraction of the pupil due to the bright light would also tend to protect the peripheral parts of the lens. The writer suggests that the heat rays are more noxious than the light rays, and feels sure that the disease can be prevented by the wearing of dark, pure blue spectacles. At the Middlesborough steel and iron works the furnace-men use dark blue glasses, and do not, it appears, suffer from cataract.

Four cases have been published of operations for congenital cataract on *adults previously blind*,⁴ and are of some interest from the point of view of the psychology of vision. In none of the patients was the newly-acquired sense of sight sufficient in itself to convey definite ideas; the new sensations had first to be interpreted by the familiar sense of touch. Thus, for instance,

when an apple was shown to one of the patients, "he tried many guesses, one wilder than the other, but no sooner was his finger brought in contact with the object he had found such difficulty to determine by sight, than he called out, 'Just fancy, an apple.' For some time afterwards anything he saw for the first time he must feel before deciding what it was; afterwards he resorted to sight alone. It is a popular fallacy that because the images of objects formed on the retinae are inverted, we begin in early infancy by seeing things upside down; none of these cases lends any countenance to this absurd idea. In all of them, the writers note that as soon as the patients were able to recognise objects by sight at all, they saw them in their true position. The sense of distance was more difficult to attain. To learn the different colours was apparently fairly easy, and a point of some interest is that in one case, while red was learnt at once and gave pleasure, it took far longer for green to make any definite impression on the patient. This seems to support Edridge Green's theory that the sense of colour depends, not on any anatomical structure or chemical process in the retina, but on the evolution and education of the visual centre in the brain. Another interesting point is, that in Dr. Ramsay's patient the difficulty of acquiring a correct co-ordination of the eye muscles was in marked contrast with the ease with which the interpretation of simple visual impressions was acquired. Before operation he had squint and continuous movement of the eyes. Afterwards the control over the eye movements remained very defective. In the writer's opinion, while the stimulus of light perception had been sufficient to maintain the retinae and optic nerves in a state of efficiency, it had been insufficient to cause the proper development of the co-ordinating centre in the brain which regulates the eye movements, so that the power, not only of binocular vision, but that of voluntarily looking in any desired direction, remained permanently impaired.

REFERENCES.—¹*Lancet*, Oct. 18, 1902; ²*Ibid*, April 12, 1902, Nov. 8, 1902, May 2, 1903; ³*Brit. Med. Jour.*, Jan. 24, 1903; ⁴Ramsay, *Lancet*, May 16, 1903; *Scott. Med. & Surg. Jour.*, June, 1903.

CEREBRAL SURGERY. (*See "Brain."*)

CEREBRO-SPINAL MENINGITIS, *Epidemic*. E. W. Goodall, M.D.

Travers Smith¹ has given a full account of 36 cases of this disease which came under his observation in the Dublin epidemic of 1900 and 1901. Most of the patients were between the ages

of five, and twenty years, six only being over twenty, and three under five. There were twice as many females as males.

The onset was definite. The most constant initial symptoms were: headache; pain and stiffness in back of neck; vomiting; shivering; in children, convulsions; pyrexia; occasionally vertigo. The disease could not be said to run any definite course; "a particular case might reach its acme in hours, days, weeks, or months. There was usually pyrexia, but the curve of the temperature was very irregular. With respect to the nervous symptoms, headache was always present and was usually intense; it was most frequently frontal; pain in the back of the neck was also constant. Hyperæsthesia at first along the spine, later on the trunk and limbs, was not uncommon. Occasionally there was anæsthesia. Toxic spasm of muscles was present to some extent in all cases, varying from retraction of the head to almost universal rigidity. Kernig's sign was present without exception, and it usually appeared early. With respect to the value of this sign in diagnosis, the writer makes the following observation: "On the whole, Kernig's sign would appear to be a fairly reliable indication of spinal meningitis; not necessarily specific cerebro-spinal, for I have observed it in tubercular and in secondary meningitis. Furthermore, personal experience has shown that this sign may be present in children suffering from severe enteric fever, accompanied by rigidity and pain on passive flexion of the neck. In fact, enteric fever in children may assume such a striking meningeal aspect that, unaided by Widal's reaction, its certain diagnosis from cerebro-spinal fever may present great difficulty."

Other motor symptoms observed were ptosis, strabismus, monoplegias, and choreiform movements. The tendon reflexes (knee-jerks especially) were almost invariably lost sooner or later. Delirium was often present, occasionally it was only slight. Coma also was frequently observed. In some cases the variety known as "coma-vigil" was well marked. The coma lasted in some instances for weeks or months. The pupils were often dilated and unequal. Curiously enough, marked optic neuritis was never detected. Cutaneous eruptions were common, especially labial or facial herpes; also a patchy, bright red erythema with undefined limits. In most of the cases the pulse-rate was abnormally slow at some stage of the disease. Extreme emaciation and occasional vomiting were often observed.

Morbid anatomy (as observed in 13 cases).—Inflammation

of the pia-arachnoid, best marked on the base of the brain and the upper surface of the cerebellum. All degrees of severity were met with, from hyperæmia with increased quantity of fluid, up to extensive purulent inflammation. The same conditions were found in the spinal cord. The morbid appearances did not always correspond to the severity of the symptoms observed during life. The *diplococcus intracellularis* was invariably found in the inflammatory exudations obtained *post-mortem*, and in the fluid drawn off by lumbar puncture.

TREATMENT.—**Morphia**, hypodermically, was found to give the best results with respect to the relief of headache and pain. "When distinct evidence of cerebral compression (coma, irregular respiration, slow pulse and dilated, irresponsive pupils, with a 'curled up' attitude of the patient), the withdrawal of 8 or 10 c.c. of cerebro-spinal fluid by **Lumbar Puncture** was performed. The result was, in a few instances, strikingly good, if transient: coma diminished, respiration became regular, and the pupils were responsive to light."

It is interesting to note that in only one instance were two inmates of the same house affected by the disease. In no case did the disease spread to patients, nurses, or attendants in the hospital. Seager,² however, in an account given by him of an epidemic observed at Lisbon in 1900 to 1902, states that the disease is almost entirely confined to the lower classes, and appears to be infectious and to a slight extent contagious. He noted the following complications as occurring with some frequency: hæmorrhagic nephritis, paralysis of the bladder, gastric hæmorrhage, corneal ulcers, blindness, from atrophy of the optic nerve, suppurative otitis media, broncho-pneumonia, myocarditis. In the hospital at Lisbon the treatment which appeared to have been of more benefit than any other was the injection of 9 to 12 c.c. of a solution of **Lysol** (1 in 100) into the spinal canal, immediately after the withdrawal by a hypodermic needle of a large quantity (in some cases over 50 c.c.) of cerebro-spinal fluid. The cases in the Lisbon epidemic appear to have been of a very severe character.

REFERENCES.—¹*Pract.*, March, 1903; ²*Lancet*, Nov. 1, 1902.

CHILDREN. (See "Infants.")

CHOLÆMIA, (Family).

Robt. Hutchison, M.D.

Simple family cholæmia, says Rolleston,¹ which is a diathesis rather than a disease, is undoubtedly a far-reaching conception

as set forth by Gilbert and Lereboullet.² It is commoner in Eastern races and Jews than in Western nations, and in private than in hospital practice. It is compatible with apparent health, or may give rise to a series of important secondary symptoms, such as dyspepsia, abdominal pain, hæmatemesis, mucous enteritis, melancholia, megrim, albuminuria, rheumatic pains, epistaxis, and slow pulse. It is closely related to transient or chronic jaundice, jaundice with splenic enlargement, biliary cirrhosis, and similar diseases. The primary signs of this suggested condition are chiefly pigmentation of the skin, which may be of the nature of slight jaundice, or dark and even like that of Addison's disease, moles, freckles, and brown areas ("biliary mask") resembling the melasma of pregnancy. Xanthelasma of the eyelids is occasionally met with. Xanthodermia, melanodermia, and xanthelasma of the eyelids form the three pathognomonic signs. The urine is usually free from bile-pigment, but in a majority of the cases contains urobilin. The blood-serum almost always contains bile-pigment.

By "hæmophœic" or "urobilin" jaundice a condition was formerly described in which the skin, though stained in a manner indistinguishable from that produced by bile, was thought to derive its colour from impregnation with pigments other than those of bile. Gubler believed the skin was pigmented by a body, hæmophein, derived from hæmoglobin; while German writers believed that the colour of the skin depended on urobilin. The basis for this view was the constant, or almost constant, presence of urobilin in the urine, and the absence of bile-pigment. Hayem's conception of hæmophœic jaundice was that it was due to a combination of true and modified bile-pigments. Gilbert and Herscher³ find that the blood-serum in so-called hæmophœic jaundice contains a certain amount of true bile-pigment, but no urobilin; the term "urobilin jaundice" is therefore erroneous. The urine is highly coloured, contains urobilin in considerable quantities, and usually bile-salts; only exceptionally bile-pigment. The urine absorbs the right end of the spectrum. A better name for the condition, since bile-pigment is usually absent from the urine, is *acholuric jaundice*. Gilbert and Herscher regard this condition as a mild form of jaundice affecting the skin of the face, palms of the hands, soles of the feet, and conjunctivæ, in which the urine is concentrated and rich in urobilin. The only difference between this condition

and the "simple family cholæmia," described by Gilbert and Lereboullet, is the concentration of the urine.

REFERENCES.—¹*Pract.* March, 1903; ²*Gaz. Hebd. Méd. et Chir.* Sept. 21, 1902; and *Med. Rec.* Nov, 1902; ³*La Presse Méd.* Dec 27, 1902.

CHOLERA.

James Cantlie, M.B., F.R.C.S.

During 1902-03 cholera prevailed in an epidemic form in several towns of Northern India, the Philippines, Northern China, and Palestine; from several of the Chinese treaty ports and from Egypt, limited outbreaks were reported.

In some parts of the Turkish Empire cholera was more or less continuously present from the early part of 1902.¹ As usual, the pilgrims to Mecca and Medina suffered severely, and in the Hedjaz generally. In May, 1902, the disease broke out in the Yemen district. In July, 1902, cholera appeared in Upper Egypt and spread in both Upper and Lower Egypt, causing at one time some 1,500 deaths daily. Towards the end of September the disease was notified in the desert district south of Damascus and to the east of Lake Tiberias. Later some villages near Gaza in southern Palestine were attacked, and still later, in October, 1902, the disease spread northwards to Jaffa, Haifa, and Tiberias. The channel by which cholera spread in the near East has not been discovered. Some consider that a Dutch pilgrim boat from Java to Jeddah in October, 1901, was the source of infection, although the officers of the ship affirmed that the mortality on board was due to malaria.

That the epidemic was severe may be gathered from the fact that in the Hedjaz district up to April 20, 1902, it caused 2169 deaths in Jeddah, Medina, and Mecca. As statistics are not kept by the Turks, the number no doubt was very much greater. From Arabia returning pilgrims brought cholera to Egypt. The fact that this severe epidemic in the near East was prevented reaching Europe is a sanitary triumph of great consequence.

Rogers,² during 1902, examined the blood of cholera patients with a view to determine if any guide to prognosis and treatment could be obtained, especially as regards transfusion. He found during his enquiry that certain variations in the leucocytes occurred so constantly as to appear to have a certain diagnostic value. Rogers came to the conclusion that a high degree of leucocytosis is a bad prognostic sign, and *vice versa*; but a very high degree is not necessarily fatal. The occurrence of leucocytosis in cholera serves to distinguish it from diarrhœa, but not from ptomaine poisoning or acute dysentery. In cases of

Asiatic cholera the blood counts in natives resulted as follows: Red corpuscles (normal 5,000,000), maximum (of 23 cases) 8,420,000 (died), minimum 2,520,000 (recovered). White corpuscles (normal 7,500), max. 53,250 (recovered), min. 2,250 (recovered). Ratio of red to white (normal 1-666), max. 1-1120 (recovered), min. 1-122 (died). Calculated in percentages the following results were noted: Polynuclear cells (normal 68), max. 88 (recovered), min. 49.6 (recovered). Lymphocytes (normal 25), max. 23.6 (recovered), min. 3.8 (recovered). Large mononuclear cells (normal 6), max. 37.6 (recovered), min. 7 (recovered). Eosinophiles (normal 1), max. 1.8, min. 0.2. From the fact that only 8 out of the 23 recorded cases recovered, and that so many of the cases of recovery are included amongst the extremes of these observations, it would seem impossible to come to any definite conclusion from his statistics as to their prognostic value. Rogers, however, believes that the leucocyte changes he describes are of considerable value, as a simple and rapid guide both to diagnosis and prognosis of cholera.

TREATMENT.—**Quinine** is advocated by E. B. Fullerton³ from experience gained in the Ohio Valley, U.S. He claims that 15 to 20 grains of quinine given promptly in cholera by the mouth, controls the vomiting and purging in an hour or two. The hypodermic injection of quinine Fullerton states is useless.

In the Philippines, where during 1902 some 200,000 cases of cholera were notified, with 140,000 deaths, the treatment consisted of the administration of **Salol** and **Tannin** enteroclyses. In some of the hospitals a recovery rate of 48.4 per cent is claimed for this plan of treatment.

PROPHYLAXIS.—Ruffer and Zachariades,⁴ who had charge of the quarantine camp at Tor, Sinai, Egypt, during the pilgrimage season of 1902, when cholera prevailed, dealt with the pilgrims as follows: Pilgrims were landed in batches of forty, sent to the disinfecting station, and there the linen, bedding, etc., were steamed at 110° C. for twenty minutes. Shoes and leather goods, etc., were immersed from five to thirty minutes in a 1-1000 solution of perchloride of mercury. All water skins were removed and tin cans supplied instead. The pilgrim was stripped and provided with a clean shirt whilst his clothing was being disinfected. Those with a pulse of over 80 were stopped, the temperature taken, and if suspected of illness they were sent, according to their state, either to the suspects hospital, to the cholera hospital, or to the hospital for ordinary diseases. The

cholera cases were bestowed in wooden barracks containing two patients each, and so arranged that any side could be opened at will; the suspects were placed in tents, and the cases of ordinary illness in well-built stone hospitals. The staff of each hospital was kept separate; at the gate of the hospitals were baths, a disinfecting stove, and a laundry. The linen from a cholera section was steamed before being washed. The camp was supplied by water from pipes. The result of these precautions were very apparent, the disease in no instance extending to any of the hospital staff or to the soldiers forming the cordon. Of the 34 pilgrim ships arriving at Tor 15 were infected with cholera; these were of course all disinfected. Flies were a great plague in the camp at Tor, invading the food, tents, beds, etc. Seeing that the disease did not spread, Ruffer and Zachariades express their disbelief in the potency of these insects to spread cholera.

From experiences gained in the Philippines the American physicians conclude that: (1) Quarantine is the most potent factor in checking the spread of cholera; (2) All persons exposed to the disease should be isolated for five days at point of arrival; (3) Merchandise, except in a thoroughly dry condition and not liable to have been contaminated, should be excluded. Detention camps for contacts are not essential, as contacts seldom develop the disease. The sale of fruit and vegetables used uncooked should be prohibited, and cooked food must be protected from contamination by flies and dust.

REFERENCES.—¹*Lancet*, Nov. 22, 1902; ²*Ibid*, Sept. 6, 1902; ³*Med. Rec.* April 25, 1903; ⁴*Brit. Med. Jour.* July 12, 1902; ⁵*Med. Rec.* Feb. 28, 1903.

CHOREA.

G. F. Still, M.D.

ETIOLOGY.—There can be little doubt that much of the diversity of opinion concerning the etiology and pathology of chorea is due to the confounding together of various irregularities of movement which are in no way related to chorea. D. B. Lees¹ therefore opened his remarks on this disease by excluding all forms of hysteria, habit-spasm, and choreiform movements resulting from gross cerebral lesions. He laid stress on the extremely close relationship between chorea and rheumatism, and estimated the proportion of cases showing evidence of rheumatism as at least 60 per cent. On bacteriological evidence, as well as on clinical, chorea is to be regarded as cerebral rheumatism in the great majority of cases; it is, however, possible

that various microbes and toxins, and perhaps sudden emotional disturbance, may affect the nutrition of the cortical cells in a way similar to the altered nutrition caused by the rheumatic toxin.

Dr. F. J. Poynton,² with Dr. Paine, produced choreiform movements in a rabbit by intravenous inoculation of the diplococcus which they have isolated in cases of acute rheumatism. Subsequent investigation showed that the diplococci were present in the pia mater, and in the endothelial cells of the blood capillaries dipping down into the motor cortex. They also found micrococci in the motor cortex in a fatal case of chorea. Dr. Poynton³ suggests that affection of the pia mater is perhaps the important feature in the pathology of chorea, which as a nervous affection may be comparable rather to tuberculous meningitis than to diphtheritic paralysis. The difficulty of complete microscopic examination of so large an organ as the brain makes a negative observation of little value, and, as Mircoli⁴ has pointed out, there are many fallacies which make it so easy to overlook bacteria in the brain that, in the face of such positive evidence as already exists, it would be hard to disprove the infective theory of chorea.

PROGNOSIS.—As Judson⁵ points out, chorea is but rarely fatal. Charcot found the mortality heaviest in girls between twelve and fourteen years of age; death is usually due to visceral—especially to cardiac—complications. In France, according to Dieulafoy and Guillemet, the mortality is as high as 2 to 3 per cent. An interesting point illustrated by Dr. Judson's case is the diminution of choreic movements when chorea is complicated by such an acute febrile condition as pneumonia; similarly West observed diminution of choreic movements at the onset of typhoid. Richon⁶ records six fatal cases of chorea in children six to fourteen years of age; all showed evidence of endocarditis, and in one the meninges were found to be thickened and congested.

TREATMENT.—Lees (*loc. cit.*), holding that chorea is almost always rheumatic, argues that the treatment which cures rheumatism ought to cure chorea, and suggests that the reason such treatment has usually failed hitherto is that the salicylates have been given in insufficient doses. He recommends, therefore, **Salicylate** in large doses for chorea, and has himself had marked success with this drug. For a child of six to ten years he begins with 10 grains of sodium salicylate combined with 20 grains

of sodium bicarbonate every two hours ; after two or three days these are increased to 15 and 30 grains respectively, and subsequently, if necessary, to 20 grains and 40 grains respectively ; the doses are given every two hours by day and every three hours by night. Thus at least 100 to 200 grains of sodium salicylate are given daily. In some cases a sort of "air-hunger," comparable to that of diabetes, and consisting of peculiar deep inspiration, has occurred where the salicylate was not combined with the sodium bicarbonate ; the necessity of their combination is therefore to be remembered. Occasionally there is troublesome vomiting, but this may usually be overcome by stopping the treatment for a few hours and then beginning again with a smaller dose. Of course this treatment is to be combined with complete rest in bed, and it is recommended that where there is much excitability the child should also be completely isolated. A **Diet of Milk** only is to be given during the acute stage of the chorea.

Arsenic in large doses, beginning with Mx-xv , has been found useful by O'Sullivan,⁷ as also by other observers, but stress is also laid on its dangers, such as gastritis, albuminuria, shingles, and arsenical neuritis. At the discussion at Swansea various speakers referred to the value of **Antipyrine** in chorea.

Eustace Smith⁸ has recently advocated the use of **Ergot**. He gives 1 drachm of the liquid extract of ergot every three or four hours to a child of any age ; and even where this treatment has been continued for many weeks in children of seven or eight years, he has never seen any harm result, and in the majority of cases there has been decided improvement. Whilst taking this drug the child shows some slowing of the pulse, but no other physiological disturbance. The addition of a drop or two of **Strychnine** to the dose of ergot seems to render its beneficial effect more rapid. Complete recovery follows quickly when the ergot begins to cause improvement, but the treatment should be continued as long as any abruptness of voluntary movement remains.

REFERENCES.—¹*Brit. Med. Jour.* Aug. 29, 1903 ; ²*Lancet*, May 4, 1901 ; ³*Brit. Med. Jour. loc. cit.* ; ⁴*Gaz. deg. Osped. in Brit. Med. Jour.* Nov. 23, 1902 ; ⁵*Arch. Ped.* July, 1903 ; ⁶*Rév. Mens. des Mal. de l'Enfance*, in *Arch. Ped.* Feb. 1903 ; ⁷*Brit. Med. Jour. loc. cit.* ; ⁸*Ibid*, July 18, 1903.

CHOROID, (Diseases of). *A. Hugh Thompson, M.A., M.D.*

Detachment of the Choroid after operation is a little known condition which has been thoroughly investigated by Prof.

Fuchs, of Vienna.¹ According to him, the accident is by no means rare, for taking his own operations for cataract during one year, he found that it occurred 14 times among 318 extractions without iridectomy, and 9 times out of 175 extractions with iridectomy, or 4.5 per cent and 5.1 per cent respectively. In addition, 14 instances occurred after iridectomy for glaucoma or (in one instance) chronic iritis. The symptoms leading him to suspect that the accident had happened was either the emptying of a re-formed anterior chamber, or its failure to form at all. The diagnosis in most cases was made with the ophthalmoscope, between the second and the eighth day after the operation, but in some cases the detachment was evident by focal illumination. Fortunately the prognosis in all cases appears to be good, a fact which, together with the English custom of not subjecting cataract or glaucoma patients to an ophthalmoscopic examination within a week of operation, may account for so little being known about it in this country. In the majority of cases, the detachment ceased to be observable by the second day after its onset, but in one case it lasted for thirty days.

In the case of four patients whose death occurred shortly after operation, Fuchs was able to make a pathological examination into the condition. He found a flat detachment caused by a pure serous fluid which lay between the layers of the suprachoroida, and that a rent existed in the fine tissue of the angle of the anterior chamber, with no detachment of retina. His opinion is that the fluid detaching the choroid is the aqueous humour, and that the opportunity of its reaching the subchoroidal area from the anterior chamber is afforded by the rent in the root of the iris at its junction with the ciliary body, a condition which was found in all these four cases.

REFERENCES.—¹*V. Graef's Arch. f. Ophth.*, 53, 3; *Ophth. Rev.*, June 1902.

CLEFT PALATE.

Priestley Leech, M.D., F.R.C.S.

A. H. Ferguson,¹ of Chicago, recommends the following operation in certain cases of cleft palate. It will be found suitable where the roof of the mouth is like a gothic arch, the palate segments extending upwards into the cleft in a more or less oblique manner, and where the cleft extends into one nostril. Two muco-periosteal flaps are liberated; the one from the inner segment turned downwards into the mouth, and that from the outer segment passed into the nostril; where these coapt, raw surface to raw surface, they overlap and are held there by a few

stitches. Ferguson has done this operation four times with good results.

The constitutional condition is important; it is well not to operate on a patient suffering from malnutrition, anæmia, bronchitis, etc., until these conditions are rectified. The local preparation is directed to counteract nasal catarrh, and to the removal of adenoids and diseased tonsils. Just before the patient is put asleep a dose of atropinè suitable to the age is given hypodermically, to check the salivary and mucous secretions while operating. Give chloroform by the spray method; place the patient in the Rose position; sit at the head of the patient; open the mouth with a gag; cleanse the face and mouth with a lotion of equal parts of alcohol and water, and cocaineize the soft



Fig. 7.

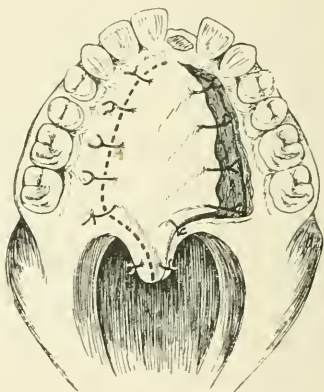


Fig. 8.

palate, pharynx and larynx. Raise a muco-periosteal flap from the nasal septum and inner segment of the hard palate, and drag it into the mouth with Brophy's hoe-shaped periosteal elevator. The formation of this flap is commenced as high in the nose as possible, and it (*Fig. 7*) is liberated from above downwards till it is hinged by its attachment to the hard palate along the teeth. Now extend the incision in the under surface of this segment of the soft palate and uvula, so as to make the completed dissection form one large flap from the hard and soft palate. The second flap is now formed from the outer segment by making an incision along the teeth (*Fig. 8*) down to the bone, and with a periosteal elevator detach a muco-periosteal flap till it is hinged by the

mucous membrane along the inner border of the bone segment. The soft palate and uvula segment on this side is now split along the anterior surface. The mucous membrane on the first flap faces downward, while that of the second flap is on the nasal aspect, and when coaptated, raw surface to raw surface, they are held there by two rows of stitches. He showed a girl sixteen years of age on whom he had operated. The speech had improved, and in order to do away with the nasal twang, Ferguson advised her to learn either French or German, and forget her English altogether. It is claimed that these persons speak the languages acquired perfectly, and when they re-learn the English language that the nasal intonation is not present.

REFERENCE.—¹*Ann. Surg.* Oct. 1902.

COLITIS.

Robt. Hutchison, M.D.

Under the heading of "colon catarrh" Stacey Wilson¹ thinks one should include a number of clinical conditions to which different names are often attached, but which have a catarrhal irritability of the large bowel as their common basis. The conditions referred to are:—

- (1,) Simple acute catarrhal colitis.
- (2,) Subacute and chronic simple catarrh of the colon, intermediate between No. 1 and No. 3.
- (3,) The so-called "muco-membranous" or "membranous" colitis.
- (4,) Mucoous colic.
- (5,) True catarrhal typhlitis.

Of these, (1) Requires no special description; (2) Really includes all the remaining types, but it is convenient to reserve it for those cases which cannot be classified as true membranous colitis, mucous colitis, or typhlitis. Such cases constitute a considerable proportion of the examples of colon catarrh met with in practice.

Muco-membranous Colitis is the well-known disease of that name, characterized by pain, constipation, the passage of "membranes" in the stools, and complicated by neurasthenic manifestations. *Mucoous colic*, as described by Nothnägel and others, differs from it in that only two main symptoms are present—colic and the passage of mucus, and is to be regarded as a pure secretory neurosis of the colon. Under the heading *true catarrhal typhlitis* the writer includes cases of catarrhal inflammation of the cæcum associated with mucus in the stools,

in which there is no evidence of involvement of the appendix. Its most characteristic feature is a tumour in the right iliac fossa, which is not due to inflammatory deposit, but to a peculiar "spastic dilatation" of the colon. This is shown by the fact that the tumour can come and go under examination.

All these types, passing into one another, and numerous intermediate forms, are met with, but they have an irritative condition of the colon, rightly regarded as catarrhal, as their common basis. The catarrhal condition manifests itself by: (1) Over-secretion, hence the passage of mucus; (2) Spastic or irregular contraction, hence colicky pain. The character of the mucus shows great variety. In acute colitis it appears as clear or slightly opalescent viscous masses, like white of egg. In the more chronic cases it assumes a more solid and opaque form, and is passed in coherent masses which may form casts of the interior of the bowel. These are perhaps formed as the result of an astringent action by some abnormal ingredient of the contents of the bowel; for, as Bas has pointed out, they may be artificially imitated by treating ordinary intestinal mucus with astringent substances, such as tannin.

ETIOLOGY.—Catarrh of the colon, like catarrhs elsewhere, is due to irritation. The abuse of purgatives and irritating enemata may lead to the requisite irritation. So may unsuitable food, or chill, or some specific febrile condition, such as influenza. In the production of the subacute and chronic forms gout and the "arthritic diathesis" seem to play a large part. Wilson believes that the nervous element in the muco-membranous cases is the result and not the cause of the diseased condition of the colon. Constipation, also, he regards as a symptom only.

SYMPTOMS.—The primary symptoms of colon catarrh are these:—

- (1,) Excessive secretion of mucus.
- (2,) Excessive irritability of the muscular wall of the colon, causing it to harden and become palpable.
- (3,) Constipation, though diarrhoea may occur instead.
- (4,) Pain—often colicky—and tenderness of the colon.
- (5,) Nervous phenomena, especially well-marked mental depression, often hypochondriasis, sometimes true neurasthenia.

In acute cases cardiac depression is often well marked, and may be dangerous; and in all cases dyspeptic symptoms may be present.

TREATMENT.—In acute cases this must proceed along the

usual lines, but the rheumatic element must be recognized in many by the administration of **Salicylates**. For the less acute forms **Salol** (20 to 30 grains per day) and a diet which leaves as little residue as possible are the best measures. If nervous symptoms are prominent they must be met by general hygiene and medicinal treatment. In long-standing cases **Saline** and **Boracic Enemata** are useful.

Langenhagen⁴ strongly recommends **Intestinal Lavage** in the treatment of muco-membranous colitis, and believes that the criticisms sometimes urged against it are without foundation. He goes so far as to say that it is capable of effecting a cure in four-fifths of the cases.

Cecchetelli-Ippoliti⁵ reports a case of mucous colitis which was healed successfully by **Methylene Blue**. The patient, a woman, aged thirty-four, had suffered for three years from chronic colitis, with strings and shreds of mucus in the stools. She had undergone various modes of treatment without avail, and had become markedly cachectic. She was placed on milk diet, with the addition of broths, and alkaline mineral waters, and was given two enemata daily of a 1 per cent solution of methylene-blue. Four pills, each containing a centigramme of methylene-blue, were also administered daily. In twenty days a marked improvement was noted, and **Hydrastis Canadensis** was prescribed to counteract the tendency to hypersecretion on the part of the intestinal mucosa that remained. **Cold Baths**, **Massage**, and the administration of **Iron** completed the cure. No more mucus or shreds were passed, and the patient succeeded in regulating her bowels by means of bland laxatives.

REFERENCES.—¹*Brit. Med. Jour.* Dec. 5, 1902; ²*Boston Med. and Surg. Jour.* Sept. 25, 1902, in *Brit. Med. Jour. Epit.* Dec. 6, 1902; ³*New York Med. Jour.* May 30, 1903; ⁴*Presse Méd.* May 13, 1903, in *Med. Rec.* May 20, 1903; ⁵*Gaz. deg. Osped.* Dec. 14, 1902, in *New York Med. Jour.* Feb. 7, 1903.

COLON, (Simple Ulceration of).

Robt. Hutchison, M.D.

There may occur in the large intestine, as was first pointed out by Cruveilhier, a simple ulcer analogous to the simple gastric ulcer, and to the simple ulcers occasionally seen in the œsophagus, duodenum, small intestine, gall-bladder, and urinary bladder. The term "simple ulcer" denotes a group of ulcerative lesions not caused by a specific microbe, nor due to the local action of any chemical agent, but having certain well-defined characteristics, including a chronic course and a progressive tendency.

Quenu and Duval¹ have collected 27 recorded cases of simple ulcer of the large intestine. They occur most frequently in the pelvic colon, next in the cæcum, and next at the colic flexures. The large bowel presents a succession of dilatations and constrictions, and the ulcer is situated in the dilated portion just above a constriction. It is often associated with similar ulcers in other parts of the alimentary tract—stomach, duodenum, etc. In shape it is round or oval, with well-defined borders, surrounded by healthy mucous membrane. Its depth is variable, most usually the mucous and sub-mucous coats have been eroded, and the base of the ulcer is formed by the muscular coat, but occasionally by the serous coat more or less thickened according to the rate of progress of the ulcerative process. Healing of the ulcer may occur, usually with a considerable amount of cicatricial contraction, or the ulceration may proceed to perforation, which occurred in 19 out of the 27 cases. From this may result either diffused or localized peritonitis, or, if the perforation take place on the surface of the colon opposed to the posterior abdominal parietes, an extra-peritoneal abscess pointing either at the loin or in the iliac fossa. Adhesion of the omentum to the inflamed peritoneal surface of the ulcer may lead later on to a band capable of causing intestinal obstruction.

The symptomatology of simple ulcer of the colon is not at all well defined; often it is entirely latent, revealing itself only by perforation. Constipation is commonly present, having probably an etiological relation. At first the constipation is unaccompanied by pain, but when ulceration is established pain appears, constant in character, situated over the site of the ulcer, and presenting characteristic exacerbations, constituting distinct "crises." During these latter constipation is marked, the abdomen is slightly distended, the pulse and temperature slightly raised, and vomiting may occur; then more or less suddenly there is a passage of flatus and fæces, and all the symptoms subside. Intestinal hæmorrhage is rare, except when the ulcer is situated in the lower portion of the rectum. Perforation is common, and may occur spontaneously, or follow the administration of a purgative, or a contusion of the abdomen.

TREATMENT is that of any grave abdominal crisis—exploratory laparotomy in the first instance, with suture of the perforation, cleansing of the peritoneum, and drainage, should the diagnosis of perforating ulcer be established.

REFERENCE.—¹*Rev. de Chir.* 1902, p. 692, in *Med. Chron.* Jan. 1903.

CONJUNCTIVA, (Diseases of). *A. Hugh Thompson, M.A., M.D.*

The subject of *membranous conjunctivitis* is treated in two papers by Jessop and Stephenson.¹ The comparative rarity of the condition is shown by the fact that only 13 cases were admitted into St. Bartholomew's Hospital in about seven years, but Stephenson, working at the Evelina and North Eastern Hospitals for children, was able to collect 43 cases in five years.

Jessop draws a distinction between 8 of his cases in which the Klebs-Löffler bacillus was present, and 5 in which it was not. Of the former series 7 had albumin in the urine; they also had the præ-auricular and often the other glands enlarged and tender, and in 6 the temperature was raised to 100°. In one case only was membrane found in the fauces. Of the five in which the Klebs-Löffler bacillus was not found, two were very severe, though without albumin in the urine. Mild cases occurred in both groups. Treatment consisted in **Lotions of Quinine, Perchloride of Mercury, and Boric Acid**, and in six cases injections of **Antitoxin**. In all but two cases there was complete recovery, in one a corneal nebula remained, and in one the cornea sloughed.

In Stephenson's series of 43 cases the following are the most important points.

(1.) In all of them the presence of the Klebs-Löffler bacillus was demonstrated.

(2.) In 88 per cent of the cases the children were under four years of age.

(3.) In 40 per cent of the cases there was systemic infection, manifested by pallor, anorexia, languor, or wasting. Fever was not found, and in only five cases was there albumin in the urine.

(4.) Diphtheria of the fauces or nose occurred in 4 cases. In 7 cases diphtheria of the skin was found, either on the eyelids and face, where it originated in excoriations due to discharge from the eye, or else on the scalp, originating from the inoculation of impetiginous sores.

(5.) In all but slight cases the præ-auricular and angular glands were swollen.

(6.) In three-fourths of the cases the malady was unilateral, in the remaining fourth bilateral.

(7.) One of the cases in which the infection spread to the fauces resulted in death. In this case antitoxin was not injected until too late. Of the rest, all recovered completely, except eight, in whom corneal blemishes remained.

The **TREATMENT** recommended in all cases is twofold: first,

the injection of a full dose of **Antitoxin**, in order to neutralise the albumoses circulating in the blood ; second, the use of **Local Antiseptics**, in order to get rid of the Klebs-Löffler bacillus itself and its associated microbes. These measures should be undertaken in every case ; for however mild a case may seem, there can be no guarantee that the process may not attack the fauces, and thus even lead to the death of the child. Therefore, antitoxin should be injected at once, without awaiting the results of a bacteriological investigation. The dose should bear relation to the severity of the disease rather than the age of the child, and should range from 1000 to 4000 units.

Trachoma.—In June, 1902, Mr. Stephen Mayou² showed a patient to the Ophthalmological Society who had been treated for severe trachoma and pannus by **X-rays**, for eight weeks, resulting in an apparent cure. The treatment consisted in 22 exposures, each lasting three minutes, the current used being one of 4 ampères, at a distance of nine inches from the everted lids. The second eye, which had been treated with **Copper Sulphate**, had not improved to nearly the same extent.

Stephenson and Walsh³ report four further cases treated in a similar way (by "focus tube exposure" they prefer to call it, since it is not yet known whether the X-rays are the sole or even the chief therapeutic agent). Of these four cases—all of severe bilateral trachoma—a cure was effected by seventeen exposures in the one case, and by six in another, with an average exposure of 10 minutes, at a distance of about 8 inches from the anti-kathode to the lid. The remaining two cases were on the road to cure. It appeared to make no difference whether the diseased lids were everted or not. The authors claim that these results, obtainable by a few weeks treatment with the focus tube, open up a new era for the ophthalmic surgeon. A fifth case of trachoma was cured by 22 applications of a mild **High-frequency Brush**, applied by means of a vulcanite electrode connected with a d'Arsonval apparatus. The authors suggest that the unknown curative agent may be identical with that existing in connection with the focus tube.

Ophthalmia Neonatorum.—Treacher Collins⁴ gives an account of the efforts which have been made in this and other countries to minimize the ravages of this disease. In about two-thirds of the cases the gonococcus is found to be present in the discharge. In other cases, usually of a milder type, Week's bacillus, Morax's diplobacillus, or a diplobacillus which is not the gonococcus,

has been found to be the exciting cause. During the years 1900 and 1901, out of 168 cases at the Royal London Ophthalmic Hospital, 56 had ulceration of the cornea in one or both eyes, *i.e.*, in one-third of the cases the patients suffered some permanent impairment of sight, though only to a slight extent in the majority of cases.

The question of *prophylaxis* is by far the most important in connection with this subject, and this is primarily one for the obstetric physician and for the state. In Australia, Switzerland, and some of the American states the law imposes a penalty on midwives for failing to call in a medical man in cases of ophthalmia neonatorum. In Bavaria, every midwife is required by law to carry in her bag a small blue bottle containing a 2 per cent solution of **Nitrate of Silver**, and to use it in all cases where the mother has suffered from a purulent vaginal discharge. In this country it is to be hoped that some similar regulation will be drawn up by the Central Midwives Board under the recent Act. The following are Treacher Collins's recommendations:—

(1.) Compulsory notification of ophthalmia neonatorum by all persons attending women in labour other than medical men.

(2.) Instruction as to the importance of the universal adoption of prophylactic measures, preferably Credé's method—*i.e.*, the instillation of a 2 per cent solution of **Nitrate of Silver**,—or the use of a **Sublimate Solution**, 1 in 2000, or **Protargol** 20 per cent.

(3.) The appointment of ophthalmic surgeons to maternity institutions, more especially those which provide for attendance of women at their own homes.

(4.) The provision in all midwifery bags of a drop-bottle labelled "drops for the eyes."

(5.) The better training of monthly nurses in the methods of aseptic cleanliness.

Electric-light Conjunctivitis.—Grimsdale⁵ gives instances of this affection. The symptoms include lachrymation and blepharospasm coming on suddenly a few hours after exposure to the electric arc light, or else after exposure to a flash, the result of short-circuiting. In one instance a similar affection occurred to a medical man who had been carrying on experiments with light especially rich in ultra-violet rays, and not extraordinarily brilliant. In all cases the affection, although alarming to the patient, was only transient, **Cold Compresses** being the measure that seemed to afford most relief.

Terrien,⁶ of Paris, saw in two years 45 cases of eye trouble

following exposure to short-circuit flashing—all but one of them employées in the Paris "Métropolitain." Besides the conjunctivitis, he states that permanent visual injury followed in three cases, and in a considerable number symptoms lasted for many months. These statements are so at variance with the experience of medical men who have had to do with large electrical works in this country, that they must be received with much caution.

REFERENCES.—¹*Trans. Ophth. Soc.*, vol. 22, 1902; ²*Ophth. Rev.*, p. 203, July, 1902; ³*Lancet*, Jan. 24, 1903; *Med. Press*, Feb. 18, 1903; ⁴*Pract.*, April, 1902; ⁵*Med. Press*, April 23, 1902; ⁶*Arch. d'Ophth.*, Nov. 1902; *Ophth. Rev.*, June, 1903.

CONSTIPATION, (Spastic).

Robt. Hutchison, M.D.

V. Sohlern¹ thinks that this form of constipation is often not recognised as such, and is consequently treated without success, on the same lines as the commoner varieties. It occurs in neurasthenic subjects, and takes the shape of a neurosis of the intestine. The characteristic symptoms are constipation, spasmodic pains, and alteration of the stools. On palpation, the intestines are felt as stiffened band-like masses, which must not be confused with gut filled with fæces, in which case the masses are kneadable and not painful; the stools are small, and contain too little water; they are either tarry or hard. At times they present masses of hardened fæces, of the size of a hazel nut or pigeon's egg. A further train of symptoms mostly met with, are those of the neurasthenia or hysteria from which the patient is suffering. A striking peculiarity of these cases is that during the intervals between the attacks, even when there had been several days without a stool, and the patient had taken nourishment plentifully, there was no tympanites, nor were there any subjective complaints.

TREATMENT.—The essential points are **Rest** in bed, non-irritating diet, which at the same time is nutritious, containing such foods as milk, honey, butter, bouillon, etc., warm applications to the abdomen during the day, and cold compresses during the night, and such nerve sedatives as **Potassium Bromide**, and the like. The bowels should be opened by injection of **Oil**, with **Chloral Hydrate** added, per rectum. **Tincture of Belladonna** given internally suffices to remove the pain of the spasmodic contraction of the gut. No drastic aperients should be given, and when it appears necessary to give anything he prefers a glass of pure water fasting, or at most Vichy or Rakoczy water.

As soon as one has succeeded in obtaining motions without pain, allow a normal diet, as long as there is plenty of vegetable and fruit contained in it. More harm than good is likely to be done by the employment of electricity and massage.

REFERENCE.—¹*Berlin. klin. Woch.* Sept. 29, 1902; *Brit. Med. Jour.* Feb. 21, 1903.

CONSTIPATION (of Infants).

(See "Gastro-intestinal Disorders of Infants.")

CONVULSIONS, (Infantile).

G. F. Still, M.D.

ETIOLOGY.—Various classifications of the causes of infantile convulsions have been made, but most observers are agreed that neurotic heredity and rickets play a prominent part as predisposing causes. In a series of notes on this condition some observers¹ assigned an important rôle to poisons extrinsic and intrinsic, whilst others considered peripheral irritation the most important exciting cause. Excesses of temperature, both high and low, are regarded as causing convulsions. The relation of infantile convulsions to epilepsy has been discussed by Moussous and D'Espine.² Undoubtedly a large proportion of epileptics have their first attacks in early childhood. Berger found that 20 per cent of epileptics had had infantile convulsions. Gowers gives a proportion of 12·5 per cent beginning in the first three years of life. Osler gives 40 per cent as the proportion of cases of epilepsy in childhood which began under the age of three years. Conversely, a large number of children who have had infantile convulsions subsequently become epileptic. Coutts noted this sequence in 11 out of 85 cases of convulsions, Dufour noted it in 15 out of 66 cases, whilst Gillet found it in 3 out of 23 cases.

One of the most interesting papers which has appeared on this subject within the past year is that by Eustace Smith³ on reflex convulsions in older children. He points out that it is not uncommon for children well past the age of infancy, indeed perhaps even for young adults, to suffer from convulsions, either in single attacks at long intervals, or in groups of attacks, the groups being separated by intervals of weeks or months; and yet to have no recurrence as they grow older. Such attacks are often preceded by a short period of ailment with symptoms pointing to some gastro-intestinal derangement, perhaps with constipation and the passage of mucus from the bowel, and with coldness of the extremities. These attacks are often regarded

as "epileptic," but unlike epilepsy they yield to such simple treatment as is necessary to correct the constipation or indigestion; they are no doubt similar to infantile convulsions, and are the result of reflex irritation acting on an unstable nervous system. Such irritation is perhaps most often from the gastro-intestinal tract, but Dr. Smith thinks that in some cases even eye-strain, from some error of refraction, may be sufficient to cause them.

PROGNOSIS.—The present writer⁴ has emphasized the close connection, which exists between infantile convulsions, and laryngismus stridulus and tetany, and also the relation of convulsions to nervous instability in later life, as shown by "nervousness," insomnia, night terrors, habit-spasm, hysteria, and various neuroses. The possibility of idiocy and of permanent paralysis must also be considered in prognosis; infantile convulsions occurred in at least 22 per cent of idiots according to the present writer's statistics, but idiocy was probably not traceable to convulsions in more than 3 per cent of the cases. The risk of idiocy is therefore a real, but probably rare one; the possibility of mental changes other than idiocy, such as eccentricities and oddities of disposition, and failure of moral development,⁵ must also be remembered.

The immediate danger of infantile convulsions is perhaps less than is usually supposed; it is difficult to estimate the actual mortality from this cause. Infantile convulsions are so often merely a terminal event in a mortal disease, that any statistics are apt to be misleading, but it seems clear that the earlier the date of convulsions in the first year, the greater the danger.

TREATMENT.—The present writer has pointed out that **Chloral** is often far more effective than **Bromide**, and that even young infants take chloral well; 2 grains may be given by rectum to an infant three months old, and repeated in three hours' time if necessary. Double this dose may be given by rectum at twelve months old. **Morphia**, $\frac{1}{4}$ th grain hypodermically, may be given to an infant six months old, but it is well to err on the side of safety in using this drug, which is not borne well in infancy; $\frac{1}{60}$ th or even $\frac{1}{100}$ th grain may be quite sufficient. **Amyl Nitrite**, administered from capsules containing 1 minim, makes a useful inhalation, and, if other means fail, prolonged administration of **Chloroform** may be advisable.

Of course in any case the underlying cause, whatever it may be, must be removed if possible; and as a routine treatment

some writers recommend a **Large Enema** at the outset, as tending to clear away the intestinal irritant which is so often present in these cases. The value of a **Warm Bath** is approved by tradition, but where the temperature is raised some would rather use a **Cold Pack**, or ice to the head. Tarbox⁶ ingenuously recommends combining a warm mustard footbath and mustard plasters to the legs and thighs, with the application of an ice-bag to the head; as "this keeps the nurse and mother busy, and is of some therapeutic value as a derivative measure."

Eustace Smith, for the reflex convulsions in growing boys and girls, recommends that special attention should be paid to the gastro-intestinal disorder which so often accompanies them, and to any source of reflex irritation, whether it be a post-nasal catarrh complicating the presence of adenoids, or even some astigmatism or hypermetropia. He also emphasizes the necessity for *improving the circulation* by a regular **Morning Douche** at 70° F., followed directly by hot sponging. The drug treatment which he has found useful is a combination of **Liquor Strychniæ** ℥j, with **Liquid Extract of Ergot** ℥xx, three times a day.

REFERENCES.—¹*New York Med. Jour.* March 14 & 21, 1903; ²*Jour. de Méd. et de Chir. Prat.* in *Brit. Med. Jour.* Oct. 4, 1902; ³*Lancet*, Jan. 24, 1903; ⁴*Clin. Jour.* Dec. 3, 1902; ⁵*Lancet*, April 19, 1902; ⁶*New York Med. Jour.* March 21, 1903.

CORNEA, (Diseases of).

A. Hugh Thompson, M.A., M.D.

The treatment of *Hypopyon Ulcer* of the cornea continues to occupy attention. Burnham¹ lays stress on constitutional treatment. Theobald² mentions a very useful measure which has escaped notice in recent discussions, though it has been in continual use at the eye hospitals; namely, cauterization of the ulcer with pure **Carbolic Acid**. Bullen,³ in calling attention to a very common source of failure in dealing with these cases, namely, an inflamed tear-sac, proposes to get over the difficulty by ligaturing both canaliculi. The procedure seems hardly so likely to be effective as the more radical method of excising the tear-sac completely.

Under the name of *Detachment of Corneal Epithelium*, J. A. Menzies⁴ describes a class of cases probably not very uncommon. After a slight injury to the cornea, which has apparently been cured, recurrent attacks of pain and inflammation take place, the attacks usually occurring on opening the eyes in the morning or during the night. The explanation is that

after a superficial injury the epithelium has not become firmly attached to the subjacent tissue. In mild cases cure may be effected by means of **Massage** with a simple ointment, but in severe cases—and in one of these the patient had been suffering for no less than five years—it is necessary to remove the patch of epithelium, which in these cases may resemble a collapsed blister, and it may be necessary to scrape the underlying surface of the cornea.

Removal of minute Foreign Bodies from the cornea is often rendered more difficult by the dilatation of the pupil produced by cocaine. Williams⁵ instils a drop of **Eserine** along with the cocaine; while Greene⁶ finds that a strong (8 per cent) solution of cocaine produces anæsthesia of the cornea before the dilatation is sufficient to remove the coloured background, over which the foreign body can be seen.

Chronic Serpiginous Ulcer of the Cornea (Mooren's ulcer).—A valuable monograph on this rare disease is published by Nettleship.⁷ It begins as a narrow crescent of infiltration, just within the limbus of the cornea, and occupying only a small part of the circumference. In a week or two, this place ulcerates, and the ulceration thenceforward spreads both in length, along the border, and in breadth, towards the centre of the cornea. Unless checked it invades the whole area, but healing almost keeps pace with ulceration, so that only the part near the advancing border is actually ulcerated, the rest of the affected surface being more or less healed and covered with epithelium, beneath which straggling blood-vessels pass across from the scleral border. Pain, congestion, and photophobia are prominent symptoms. Iritis is common, but hypopyon and perforation are rare. Chronicity is an essential feature of the disease, from four to twelve months being the usual period of duration. The essential cause of the disease has yet to be discovered, but the fact that in three-fourths of the cases it begins at some part of the margin which is uncovered when the lids are open, points to exposure to irritants as being one factor. It is a disease of adults, and the liability to it is much increased after the age of forty. In more than one-fourth of the cases it attacks both eyes at a shorter or longer interval.

With regard to **PROGNOSIS**, permanent spontaneous cure is almost unknown, and even when the disease has been definitely checked by escharotics it often recurs. The improvement in prognosis since the use of the cautery has become general is,

however, encouraging. Before 1885 four-fifths of the cases went on to completion, whereas, since that date, in more than half some sound cornea has been saved. Almost the only effective treatment is **Cauterisation** by heat, or failing that by pure **Carbolic Acid**. The important thing is that what has to be burnt should first be laid bare—by scraping, or in case of overhanging epithelium, cutting with scissors—and then burnt deeply, even at the cost of spoiling a little good tissue beyond the line of disease. Whether this can better be done at one, or two, or at several sittings, will vary in different cases and in different hands. In no case should a patient be discharged as cured until he has been watched for several weeks.

REFERENCES.—¹*Lancet*, Dec. 6, 1902; ²*Amer. Jour. Med. Sci.*, June, 1902. ³*Scott. Med. & Surg. Jour.*, May, 1903; ⁴*Ophth. Rev.*, Dec. 1902; ⁵*Brit. Med. Jour.*, Jan. 4, 1903; ⁶*Ibid*, May 2, 1903; ⁷*Trans. Ophth. Soc.*, 1902, p. 103.

CRAW-CRAW.

James Cantlie, M.B., F.R.C.S.

Nothing definite concerning the nature of this ailment has yet been settled. We know now, however, that it is not confined to the natives of the West Coast of Africa, for it is met with in Uganda and elsewhere. To all appearances crawl-crawl resembles advanced and neglected cases of ordinary scabies, and seeing that sulphur cures the skin eruption, the identity of the two ailments is still further suggested. The itch insect has been found by Dr. G. C. Low in Uganda in several cases of crawl-crawl; and when it is remembered how difficult it is to find the actual insect in even advanced cases of ordinary itch, the failure to find the parasite in cases that have been allowed to exist during many years quite unrestrainedly is not surprising. The writer is of the opinion that crawl-crawl is not a specific ailment, but merely a condition induced by neglected scabies.

CYANIDROSIS.

Norman Walker, M.D.

Hall¹ describes three cases with peacock-green discolouration between the toes, in which no colour-producing organism was found. On further enquiry he ascertained the fact that the acid sweat dissolved off the black dye from new stockings, and thus produced the condition.

REFERENCE.—¹*Brit. Jour. Derm.* Nov. 1902.

CYANOSIS.

Prof. A. H. Carter, M.D., F.R.C.P.

Dr. Gibson¹ discusses the pathology of this condition. It is now very well known that the blood in cyanotic states is of a high specific gravity—from 1070 to 1080. The hæmoglobin is

increased—often exceeding 100 per cent. The red cells increase in number, so as frequently to exceed 7,500,000 per cubic millimetre ; while the leucocytes, although not so commonly altered in number, often reach to 12,000 per cubic millimetre. In cyanosis the red corpuscles are insufficiently oxygenated, they cannot perform such an active part as oxygen carriers, and they cannot yield so much oxygen to the tissues. There is also less metabolism in the tissues, and therefore less waste produced. In a word, the functions of the corpuscles being lessened, the wear and tear which they undergo is reduced, and the duration of their individual existence increased. The number of the corpuscles must in this way be proportionately augmented, and this must lead to the numerical increase, as well as to the high percentage of hæmoglobin, until a balance is struck between the production and the destruction of the blood corpuscles.

Cases are quoted in which the blood examinations showed that the above changes are generally distributed throughout the whole circulation, though not exactly to an equal extent. Two further cases are reported for the purpose of ascertaining whether the inhalation of oxygen had any beneficial effect upon cyanotic conditions, but the results were in the negative.

REFERENCE.—¹*Lancet*, Jan. 17, 1903.

CYSTS, (Dental).

J. G. Turner, F.R.C.S.

J. C. Oliver¹ records three interesting and unusual cases. Case 1 showed the unusual feature of hyperostosis of the maxilla over an unerupted tooth, due to chronic suppuration and necrosis following infection of its sac. Case 2, æt. ten, showed on microscopic examination of its walls, the structure of a myeloid sarcoma. In the cyst were found a canine and an incisor tooth (mandibular). Case 3, æt. twelve, showed again unerupted teeth in the mandible, surrounded by tissue having the microscopic structure of a myeloid sarcoma. In this case a second cyst appeared in connection with the canine tooth of the same side. Microscopic examination of its wall showed only inflammatory tissue. The roots of the unerupted teeth in these cases were ill-formed and stunted, the crowns normal.

Commenting on these cases the author remarks that statistics seem to show that cystic growths occur at about the period when teeth should erupt. The lower third molar is the most frequently affected, the canines next. To account for them he puts forward as possibilities :—

(1,) Misplacement of the dental germ, either in reference to

position and depth in the gum tissues or in reference to the axis of embryonal development and embryonal forces.

(2.) Embryonal rests. The neck of the primitive bud that springs from the primary enamel germ for the development of the permanent tooth may persist, and develop cysts in definite relationship to the crown of a fairly well developed tooth. Such a process is entirely analogous to the rests of the ovary which are left after the infolding of the germinal epithelium, and which are responsible for the cystadenomata of the ovary. (Valentine, "Pflüger Ducts.")

(3.) Failure in evolution. (a) The membrane of Nasmyth may become unusually thick and tough and fail to resorb. This may occur with a normally placed follicle, but more particularly when the axis is misplaced and it lies in an oblique, transverse, or reversed position. (b) The wall of the follicle is unusually dense and resistant, giving rise to a similar series of changes to the above. A general or partial jumbling of the enamel and dental papilla at the time of their formation may take place.

(4.) Irritation. (a) The proliferative activity of the cells concerned in the evolution of the teeth, by reason of displacement, does not meet with the normal juxtaposition and arrangement of cell force and interaction that are believed to be requisite to the normal histologic arrangement of cells in their development. This results in a proliferative activity on the part of the cells of the dental papilla; or, as occurred in the three cases reported and as most often occurs, the surrounding periosteal and their connective-tissue structures undergo proliferation. The histologic structure of the tissue found in the cysts reported is that of giant-celled sarcoma, but they are not sarcomata. They are composed of connective tissue which has reverted to an embryonal or granulation tissue type under the influence of prolonged irritation. (b) The mechanical irritation by an obliquely or transversely placed tooth crowding into the side of an alveolar border may certainly give rise to the same irritative changes that have just been described, and may also explain the three cases reported. The interior wall of the cyst in Case 3 showed typical granulation tissue. This irritative change is analogous to that found around encysted bullets or other foreign bodies.

[Explanation (3a) is invalidated by the fact that normally the membrane of Nasmyth does not resorb, but may be found applied to the enamel of the erupted tooth.—J. G. T.]

REFERENCE.—¹*Ann. Surg.* Jan. 1903.

DEAFNESS. (See "Ear, Diseases of.")

DEMENTIA PRÆCOX.

James Shaw, M.D.

DIAGNOSIS — In last year's *Annual* abstracts of papers on this disease by Masselon, Serbski, etc., containing references, favourable or unfavourable, to the views of Kræpelin, were given. Professor Bleuler's¹ long experience has taught him to delimit the disease now in much the same manner as Kræpelin has done. Bleuler believes that the symptomatology of dementia præcox is sufficiently definite to enable one to make as unerring a diagnosis of it as one does of pneumonia or typhoid fever.

Dementia præcox is characterized by a definite kind of mental enfeeblement, that is not found in any other psychic disease. This mental enfeeblement takes the form of an alteration of the emotions and the association of ideas, with little or no morbid impairment—except secondarily through the effect of intercurrent hallucinations or inattention—of the memory, of consciousness, or of the power of orientation. The emotional life, as a whole, becomes stunted. Emotions are excited with much more difficulty or not at all, and such emotions as still exist are often inadequate or perverted. The patients take little interest in things of importance to them. The affective emotions, *e.g.*, the affection of a mother for her child, may, however, to some extent be retained. And in patients who have to remain in asylums the feeling of anger is heightened, so that under the influence of delusions and negativism it may become the prevailing disposition.

The association of ideas is disturbed in such a way that, on the one hand, the mental connections are interrupted here and there in an irregular manner; on the other hand there appear thoughts the connection of which with the preceding ones, either in part or as a whole, is not traceable. The disturbance of association does not always exist to the same degree in the actions as in the speech. It can be observed when the patient is asked to name the first word that suggests itself to him on hearing a word pronounced by the examiner.

The acts of these patients are not based on motives, but on chance fancies. When they tear their clothes or break window panes, they cannot give any reasons for their actions, or else their reasons are improvised and quite incomprehensible. The "mannerisms" of dementia præcox are not met with as constant accompaniments in any other psychic affection.

The perceptive faculty remains good so long as it is not impaired by the patient's indifference. The patients register mentally everything that is within their psychic comprehension, and can with ease relate what is going on about them if they are in a suitable mood.

There does not exist any definite line of demarcation between the different varieties (hebephrenic, etc.), and they are rapidly interchangeable. The disease as a whole, however, is well differentiated from other psychoses, though in practice it is not always easy to distinguish it from paranoia. Further, there are cases which present only the cardinal symptoms—disturbances of association and of emotions—without katatonic symptoms, excitement, delusional ideas, hallucinations, etc. Such cases are not rare outside the asylum walls. To postulate that the dementia should be very evident in every case is illogical, and is not put forth in Kræpelin's works.

Of 120 tramps who reached his asylum from the Kislau work-house, Wilmanns² placed as many as 66 under the head of dementia præcox. He distinguishes three groups: individuals who were mentally sound until between the ages of twenty and thirty, when they suffered from acute insanity, which left permanent mental weakness or delusions; a second group in which there was no acute outbreak of insanity, but a sudden disturbance of conduct slowly leading up to mental defects or delusions, including characteristic cases of hebephrenia; a third group, definitely pathological from the first, and including the cases of katatonia. The author does not believe that this large proportion of hebef'renic and katatonic cases which he has found among tramps can be solely accounted for by their mode of life or by the influence of imprisonment, but rather that the congenital mental condition in such cases directly predisposes to an anti-social and unsettled life. He admits that many of these cases would by others be regarded as coming under the head of imbecility, but points out that we are not entitled to regard imbecility as a progressive condition; we can at most regard such cases as imbecility on which hebephrenia or katatonia has been grafted.

Séglas³ remarks that whilst the syndrome, katatonia, may be present transitorily in many mental diseases, it is in certain forms of dementia præcox that we observe it in its full development and with a marked character of persistence. He shows that the principal phenomena of katatonia, viz., stereotypy,

cataleptic immobility, and negativism, are quite compatible with abulia.

Sérieux⁴ defines dementia præcox as a psychosis essentially characterized by a special and progressive psychical enfeeblement, supervening usually during adolescence, and culminating as a rule in the disappearance of all manifestation of mental activity, without ever compromising the life of the subject.

Psychologically that which differentiates dementia præcox is the weakness of mental images. Hence absence of emotional tone, of tendency to act; the impossibility of fixing the attention; the difficulty of associating ideas or recalling impressions. The signs to be specially noted are: psychical enfeeblement with relative integrity of memory; disappearance of affective feelings, of emotional tone; apathy; puerility; feeble judgment; marked disorder of personality not related to the activity of the delusion; the peculiar characters of katatonic excitement and stupor; *flexibilitas cerea* or rigidity of muscles; suggestibility or negativism; confusion of written or spoken language ("jargonaphasia"); echolalia (echo-speech); verbigeration (constant repetition of nonsense) and other forms of stereotypy; with the association of such physical signs as pupillary anomalies, altered superficial and deep reflexes.

Dementia præcox must be specially differentiated from hysteria, neurasthenia, degeneracy, and in the final stage from imbecility, pre-senile dementia, epilepsy, general paralysis. [Like most continental writers, the author, whilst he mentions various psychoses and neuroses with which the disease may be confounded, makes no reference to any special adolescent psychosis other than dementia præcox.—J. S.] In asylums the proportion of these cases to the total number of patients varies from 5 per cent (Christian) to 15 per cent (Kræpelin).

ETIOLOGY.—Adolescence is the great factor in this. Kræpelin found that out of 296 cases, 60 per cent began before the age of twenty-five years. Heredity is important. A large proportion of the cases (*e.g.*, 60 per cent) appear to enjoy good mental health before the onset of dementia præcox. Morel considered that alcoholism in the parents is a powerful factor. Among the determining causes the puerperal state and imprisonment are especially mentioned, more particularly in the katatonic form. Over-pressure has been mentioned by some observers (Christian, Marro).

PROGNOSIS.—The duration may be ten, twenty, thirty, or even

forty years. Remissions may be observed in the second stage, and especially with katatonic excitement. They generally come on in the first few months, but occasionally after three years or more. In 20 per cent of the cases the remission is prolonged, and may be put down as a cure in spite of the persistence of a few signs. Relapses generally supervene within five years of the onset of the remission—occasionally later. While the disease is not as fatal as general paralysis, and does not cause death, its prognosis is grave; mental recovery is rare.

TREATMENT.—According to Sérieux, organotherapy has given no good results. Re-education of suitable cases seems to be indicated.

Dr. C. L. Carlisle⁵ found that a graded and systematised plan of outdoor exercise, including games and useful occupations, produced great benefit after the physical health had been improved by a judiciously selected dietary, containing the greatest possible amount of tissue-building material, with the least possible amount of detritus.

REFERENCES.—¹*Jour. Ment. Path.* Nos. 4 & 5, 1902-1903; ²*Cbl. f. Nervenheilk. u. Psych.* Dec. 1902, in *Jour. Ment. Sci.* April, 1903; ³*Nouvelle Iconogr. de la Salpetr.* 1902, No. 4, in same; ⁴*Rev. de Psych.* No. 6, June 1902, in same; ⁵*Amer. Jour. of Insanity*, No. 4, 1903; *Lancet*, Sept 19, 1903.

DENGUE FEVER.

James Cantlie, M.B., F.R.C.S.

During the latter part of 1901 and the first six months of 1902 a severe and widespread epidemic of dengue fever prevailed in Burmah, the Malay Peninsula, Penang, Singapore, Bangkok, Hong-kong, and South China. In Beyrouth, Syria, a severe outbreak occurred during the winter of 1901-02.

F. O. Stedman,¹ who observed the disease in Hong-kong, states that the dengue began about the middle of October, 1901, and continued for some seven weeks, subsiding with the advent of cold weather. The chief points noted by Stedman are:—

(1,) That, though highly infectious, dengue frequently attacked only one inmate of a household.

(2,) The invasion was sudden, and the onset marked by pains in joints, in limbs, shivering and fever.

(3,) An initial rash of a diffuse erythematous character, most marked on the face, is occasionally present. There is some oedema of the skin; a temperature after a few hours of 103° or 104°, or higher.

(4,) On the second day there is an abatement of symptoms,

but the fever continues for two or three days or more, with headache, white-coated tongue, and *malaise*.

(5,) On the fourth or fifth day from the onset the terminal rash appears. The rash consists of small, slightly raised, dusky red maculæ, each spot being about the size of a split pea. The spots may occur on any part of the skin, and may be universal. The terminal rash disappears after twenty-four hours, and is followed by a branny desquamation.

(6,) During convalescence aching in the limbs may continue, fever may recur, and it may be several weeks before the patient completely recovers.

Catarrhal symptoms in the respiratory tract are extremely rare, and the mortality from the disease is *nil*.

Nightingale² reports the arrival of dengue in Bangkok, Siam, in December, 1901.

Skae³ noticed the first case of dengue in Penang on December 5th, 1902, and the epidemic, after raging with severity for three months, had almost disappeared by the end of March, 1903. The disease in Penang, according to Skae, differed somewhat from that met with in Hong-kong and Bangkok. The incubation period lasted one or two days, but, as in Stedman's report, the exact period is difficult to determine. In the earlier part of the epidemic aching and pains in the limbs were almost entirely absent, rendering the outbreak difficult of diagnosis from malaria, in which aches in the limbs are often complained of. Skae observed further that: (1) Constipation was common during dengue; (2) The conjunctivæ occasionally showed ecchymoses; (3) The initial rash was observed as a mere congestion of the skin of the face in a few cases; (4) The terminal rash did not appear at all in some cases, in some it was noticed as early as the second day, and in others as late as the seventh. It first appeared on the flexor aspect of the forearm, and was faint or absent on palms and soles. Itching was rare, no desquamation noted, the temperature did not rise with the terminal rash. Skae observed on the inside of the lips and cheeks and on the tongue a painful eruption consisting of isolated, greyish vesicles surrounded by an area of congestion. The vesicles appeared on the second day of the illness. In Penang the disease was mild in type, and in no single case did rheumatoid pains, rash, and terminal fever all occur together. Other fevers present at the time dengue prevailed in Penang were malaria, febricula, measles, enteric, and small-pox.

Pridmore⁴ observed an epidemic in the town of Bhamo, Burmah, during the months from April to July, 1903; at the latter date the disease still prevailed. According to him: (1) The disease is highly infectious, and the carrier need not be affected; (2) Incubation lasts from one to four days, the average being three; (3) The initial rash was a mere hyperæmia of the face; the pains in limbs and joints were most marked; the terminal rash was present almost invariably on the sixth day, and showed first on the palms and wrists, and then on the arms, legs, soles, and perhaps the whole body. The irritable nature of the eruption and a trifling desquamation were noted. Pridmore noted in Bhamo a well-marked enlargement and tenderness of the superficial lymphatic glands, accompanying or preceding the terminal rash in many cases. He observed in at least 75 per cent of his cases that some or all of the main groups of glands in the neck, axillæ, and groins, and even the glands above the elbow joints were affected. The Burmans are well acquainted with dengue, and state that it visits the country every thirty years.

TREATMENT.—Stedman found **Sodium Salicylate**, also **Salicin** and **Potassium Iodide**, of some slight benefit. Skae gave **Phenacetin** with **Caffeine** and a **Diaphoretic** mixture; but beyond general treatment no known drug has any specific action in dengue. Graham,⁵ from observations made at Beyrouth in Syria, is of opinion that dengue is associated with the presence of an amœboid organism in the red corpuscles corresponding to those met with in malaria, only that the cycle of reproduction is longer in dengue. Mosquitoes, he believes, carry the disease. Stedman also states that in most relapses of fever after dengue the type seemed of a malarial nature, and in several cases in which he and others in Hong-kong examined the blood, malarial parasites were found.

REFERENCES.—¹*Brit. Med. Jour.* July 15, 1902; ²*Ibid.* Sept. 20, 1902; ³*Ibid.* Nov. 15, 1902; ⁴*Ibid.* Nov. 15, 1903; ⁵*Cour-Rec.* March, 1902.

DENTINE, SENSITIVE.

J. G. Turner, F.R.C.S.

As an obtundent of sensitive dentine, Hopkewitz¹ recommends the use of **Zinc Chloride** in an alcoholic and chloroform solution, which he thinks superior to a watery solution.

In 1900 Arköny expressed his opinion that **Nervocidin** (a compound of N, C, H, and Cl: formula not stated) might prove useful as an aid to painless excavation of sensitive dentine.

Söderberg has made experiments with this substance, both to ascertain its local and its general actions. A rabbit of 1150 grm. weight died in twenty hours, after subcutaneous injection of $2\frac{1}{2}$ milligrams, showing tremor of the extremities, systemic muscular paralysis, paralysis of respiration, and finally cardiac failure. Other experiments were confirmatory. Tolerance was not produced, though expressly tried for. Locally a 1-1000 solution painted on the tongue produced local anæsthesia and loss of taste; reaction to heat and cold remained normal. A solution $\frac{1}{2}$ -1000 dropped into the eye produced in twenty minutes anæsthesia lasting five hours. At first there was some burning and lachrymation.

To use it as an obtundent to sensitive dentine Söderberg made a fluid of the following composition :—

R Gum Arabic	3j		Water	3j
ZnSO ₄	3ss			

Dissolve the ZnSO₄ in the water, add the gum arabic, stir, let stand for twenty-four hours, strain. In 3ij of this liquid dissolve gr. x of **Nervocidin** and gr. x of **Cocaine Hydrochloride**. To make a cement for the temporary filling of a sensitive cavity, incorporate uncalcined zinc oxide, and fill as with any osteo-plastic material.

Teeth treated in this way were found painless, or nearly so, to excavation in from two to forty-eight hours, and when examined at intervals of from one month to a year after were found to possess healthy pulps. As a hypodermic anæsthetic nervocidin does not seem to act well.

REFERENCE.—¹*Dental Cosmos*, p. 33, Jan. 1903.

DERMATITIS.

Norman Walker, M.D.

The close association of tuberculosis with severe attacks of dermatitis is well brought out in a fatal case of the acute exfoliative type narrated by Brunsgaard.¹ The patient was a male, aged seventeen, and the *post-mortem* examination revealed tuberculous cavities in the lungs. In the subcutaneous effusions were found also various coccal micro-organisms.

Finny² records an example of *dermatitis gangrenosa*, where general tuberculosis was found at the autopsy. The attack, which occurred in a boy of three, appeared at first to be impetigo, and numerous pustules were present over the pubes, penis, wrists, and backs of hands. Three weeks later it had spread to the lower extremities, face, and scalp, and subsequently deep ulcers, punched out in character, appeared. The family history

was negative, and no connection with vaccination or varicella could be made out.

Dermatitis vegetans, in a girl of eight, is described by Jamieson,³ the condition commencing as a fungating eruption on the left middle finger, and eventually spreading in patches to all parts of the body. He discusses the pathology of this, the first case described in a child. As regards treatment, it was found that the constant application of weak **Ammoniated Mercury Ointment** produced a cure after other remedies had apparently failed.

Rolleston and Mercer⁴ report the occurrence of a superficial dermatitis occurring during *typhoid fever*. The lesions, which were practically limited to the lower part of the chest and the front of the abdomen, started as erythematous macules, but eventually they formed oval, scaly lesions, with erythematous edges resembling those of seborrhœic eczema.

Morley and Ransome⁵ give an account of a case of *bullous eruption*, in a butcher, following upon a suppurating wound of the finger, the eruption eventually extending over the trunk. Wende⁶ describes a case of *epidermolysis bullosa hereditaria*, the lesions affecting mostly the upper and lower extremities and the skin round the mouth and anus; the nails of the hands and feet were absent, and the mucous membrane of the mouth was ulcerated. A younger brother died of skin affections round the mouth and anus, and the particular point which he emphasises is the falling out of the hair of the scalp; there was no history of syphilis. C. J. White⁷ describes a case of recurrent bullous dermatitis in a hysterical subject, where the eruption was confined to one side of the body, and in the same paper he discusses the types of hysterical skin eruptions.

Dermatitis caused by Plants.—Many instances of this have now been recorded, and the number of plants incriminated has been increased. Miss Marshall⁸ describes a case in a rheumatic female, aged forty-nine, due to the *primula obconica*, where the face and the hands were swollen and dusky red. Lrantz,⁹ discussing the lesions, states that they may resemble acute eczema, erysipelas, or be bullous in character. Contact with the plant is necessary, but subsequently it may be transferred to other places by the hands. Itching, burning, and general *malaise* come on in a few hours, but there is no rise of temperature, and the treatment must consist of thorough removal of the last traces of the plant poison from the skin by bathing with hot **Boracic Lotion**, and the subsequent

application of bland salves of **Bismuth, Zinc**, etc. *Humea elegans*, a plant indigenous to New South Wales, but frequently grown in greenhouses in this country, was also found by Hearnden¹⁰ to have caused a bright red rash with vesiculation in a female patient, and he produced a similar eruption on his own arm by rubbing with a leaf. With regard to *Rhus diversicolor* (poison oak), Schwalbe¹¹ in a *resumé* of its effects, gives several instances of its toxic action being transferred by hand or clothing to others. The poisonous active substance is, he states, an oil not yet analysed, and the so-called toxicodendric acid described by Maisch as the active agent is really acetic acid. On the leaves and stalks are small hairs covering the lactiferous ducts, and these hairs when detached carry the poison by sticking into the sudoriferous or sebaceous glands of the victim. The interesting fact is mentioned that persons who sweat little are immune, probably owing to the ducts of the skin glands in these individuals being less open. For preventive and curative treatment he advises the rubbing in of weak **Alkaline** (ammonia or soda) **Lotions**.

Dermatitis Medicamentosa.—Shelmore¹² observed in a male patient aged forty a severe erythematous rash affecting the entire trunk and the greater portions of the arms and legs, which appeared within twelve hours from the taking of a 5-grain dose of *calomel*. The rash, which was accompanied with intense burning and stiffness, but no itching, began to disappear in twenty-four hours, and was entirely gone in six days. *Iodipin* given in drachm doses of 10 per cent solution, was noticed by Klotz¹³ to produce a papular and bullous eruption after ten doses, and it is interesting to note that previously the same patient suffered from a similar eruption after *iodide of potash*. *Bromides*¹⁴ given internally for long periods, as they often are, may produce an acne-like eruption on the face, and Roche, after trying various local applications for this, finds that the washing of the parts night and morning with **Buttermilk** gives satisfactory results.

Lyon and Whezy¹⁵ describe a case of infective dermatitis in a Chinaman, who was accustomed to using hypodermic injections of crude *morphia*. The ulcers were deep and crusted, and were present all over the anterior surface of the body and limbs. In the pus was found a diplococcus resembling that found in gonorrhœa.

REFERENCES.—¹*Norsk Mag. f. Lægevidensh*, Oct., 1901; ²*Indian*

Med. Rec., Jan. 1, 1902; ³*Brit. Jour. Derm.*, Nov. 1902; ⁴*Ibid.*, June, 1902; ⁵*Lancet*, May 16, 1903; ⁶*Amer. Jour. Cut. and Genito-Urin. Dis.*, Dec., 1903; ⁷*Amer. Jour. Cut. Dis.*, Sept., 1903; ⁸*Women Student's Med. Mag.*, Edin., June, 1903; ⁹*New York Med. Jour.*, June, 1902; ¹⁰*Lancet*, July 26, 1902; ¹¹*Med. Rec.*, May 30, 1903; ¹²*Amer. Med.*, vol. iii, No. 23; ¹³*Amer. Jour. Cut. Dis.*, July, 1903; ¹⁴*Lancet*, Dec., 1902; ¹⁵*Amer. Med.*, vol. vi, No. 10.

DERMATITIS HERPETIFORMIS.

Norman Walker, M.D.

Milan,¹ in a case of this disease which presented exaggerated patellar reflexes, inequality and dilatation of the pupils, and emotional symptoms, obtained by lumbar puncture a sterile fluid with distinct lymphocytosis. He concludes that the cause is an organic lesion of the nervous system. Eosinophilia is not in his opinion specific.

Park² gives a full account of a severe type occurring in a woman of forty-nine, and associated with pyosalpinx and endometritis, in which **Cacodylate of Sodium** hypodermically did some good, but hypodermic **Adrenalin Injections** were most beneficial. Twenty minims were at first given, and then reduced, till at time of report 5 minims were given daily to prevent recrudescence. The larger doses produced faintness, and his experience is that after a time the patient becomes sensitized and requires less. An easy deduction is, he says, that the disease is caused by vaso-motor disturbances.

REFERENCES.—¹*Ann. de Derm. et de Syph.* Nov. 1902; ²*Scot. Med. and Surg. Jour.* Nov. 1902.

DIABETES. *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

Last year reference was made to the observations of Zuelzer and Blum on the glycosuria resulting from the injection of supra-renal extract. These results have been confirmed by Herter and Richards and Croftan.¹ The latter arrived at the conclusion that the glycosuria so produced depends upon the action of a diastatic ferment in the supra-renal gland, which converts the liver glycogen into sugar. These interesting conclusions have been further amplified by Herter working with Richards and Wakeman,² who found that the amount of sugar depended upon the glycogen-content of the liver: after a period of starvation the excretion of sugar induced by adrenalin is very small. Painting the exposed pancreas with a solution of adrenalin was found to produce glycosuria, and this was shown to be independent of elevation of the blood pressure. It was found that potassium cyanide acted in exactly the same manner,

and a number of reducing substances were tested and found to possess the same power; yet there were exceptions to the rule which made it impossible to accept the conclusion that the effect was directly dependent upon their reducing activity; *e.g.*, potassium cyanide itself possesses no reducing power, and a solution of hydroquinone of the same reducing activity as one of adrenalin chloride, was very inferior in its power of producing glycosuria. They therefore conclude that the result is due to some toxic action on the pancreatic cells which hinders their oxidizing action, rather than to the abstraction of oxygen from the cells.

The glycosuria produced by painting the pancreas was found by Herter and Wakeman³ to be as high as 14.3 per cent in the second hour after the application. The sugar of the blood was also at first increased, as was the urinary secretion. At the same time the stored glycogen in the liver diminished, and the sugar in the blood of the hepatic vein was increased. They also found that massage of the supra-renal bodies caused glycosuria, and that extirpation of these organs was followed by a great fall in the amount of sugar in the blood. Stefano Barba⁴ has failed in a number of experiments to cause glycosuria in human beings by injections of supra-renal extract, whether in persons with normal supra-renal glands or in those suffering from Addison's disease. In one case of Addison's disease the general condition was slightly aggravated, while in two others there was some improvement of the general health and increased diuresis.

It is well known that Lépine and his pupils maintain that the blood normally contains a glycolytic substance, and that diabetes is the result of the failure of this action. Their opinion has been very generally contested. F. W. Pavy and R. A. Siau⁵ have studied the question, and conclude that the glycolytic power of freshly-drawn blood is too small to have any physiological significance, and only after the blood has stood from four to six hours does it amount to anything definite; they also fail to confirm Lépine's doctrine that the larger the amount of sugar present the larger is the loss that is found to occur. On the other hand, Croftan⁶ recognises the glycolytic power of the blood if it is kept at the temperature of the body, and finds that lymph also possesses the same action. Experiments to determine the seat of the active agent traced it to the degenerating leucocytes. He thinks the small loss of sugar in

the first half-hour may be due to the presence of glycogen, which becomes converted into dextrose at the same time as the sugar-destroying ferment is being gradually formed. He is of opinion that the rôle of the pancreas in connection with sugar destruction depends upon its ferment trypsin. He has discovered that the normal function of trypsin is to destroy hæmoglobin, forming bile acids and bile pigments, while sugar is destroyed as a part of the same chemical process. When the pancreas is so diseased that the supply of trypsin is materially affected, the destruction of hæmoglobin takes place along other lines, with the formation of hæmachromogen and without sugar destruction. As we shall see, this discovery has a bearing upon the relation of diabetes to pigmentation in so-called bronzed diabetes. Croftan considers that his experiments suggest the desirability of cautious therapeutic experiments with leucocyte extract or Buchner's glycolytic malt ferment. These opposite results, reached by competent observers, render it exceedingly difficult to draw any conclusion which shall form a basis for pathology. The explanation of the contradictory statements is that these experiments deal with exceedingly small quantities of sugar in very complex fluids. It has long been known that dying tissues form sugar, and it may be remembered that Pavy for long contended that the appearance of sugar in the liver was merely a *post-mortem* phenomenon, so that it does not seem worth while for Cadeac and Maignon⁷ to subject guinea-pigs and dogs to extensive crushing of muscles in order to prove that such injured muscles contain quantities of sugar. This seems, in fact, to be the sort of experiment which affords powder and shot to enemies in the anti-vivisectionist camp.

The relations of the pancreas to diabetes have been carefully studied from the point of view of morbid anatomy, especially by Opie.⁸ From a review of 29 cases of chronic pancreatitis seen at the Johns Hopkins Hospital at Baltimore, he is of opinion that the affection is usually secondary to lesions of neighbouring organs, especially of the liver and bile ducts. He recognizes two types of chronic inflammation: (1) Interlobular, in which the islands of Langerhans are unaffected except in the advanced stage; and (2) Interacinar, in which these structures are attacked from the beginning. He finds the most common cause of chronic inflammation to be obstruction of the duct by calculi or cancer; secondly, invasion of bacteria from the digestive tube or the bile ducts; and thirdly, alcoholism. In 8 out of the 29 cases

the lesion of the pancreas was associated with atrophic cirrhosis of the liver. In another paper Opie relates a case of diabetes in a coloured woman, aged fifty-four, whose pancreas was small, weighing 80 grams, but soft and showing no general increase in its interstitial tissue, but on microscopical examination the islands of Langerhans were found to have undergone extensive hyaline degeneration, the change being limited to the islands. He contends that destruction of the connective tissue may occur without causing diabetes so long as the islands are intact, and believes that these structures are in some way especially related to carbohydrate metabolism.

Wright and Joslin⁹ have endeavoured to test this conclusion by studying the pancreas in 9 cases of diabetes; in two they found hyaline changes in the islands of Langerhans; in one there was exudation of fibrin and leucocytes in the connective tissue, but no changes in the islands, and in the other six cases there were no lesions at all in the gland. They conclude, as it would seem rather illogically, that lesions of the islands of Langerhans are important factors in the pathology of diabetes. Weichselbaum and Stangel¹⁰ have examined the islands of Langerhans in 35 cases of diabetes, and assert that in all cases of pancreatic diabetes constant definite changes obtain in the islands sufficient to impair or destroy their functions.

Glycosuria has been frequently observed to be associated with cancer; and what has been regarded clinically as true diabetes has been found to depend upon cancer of the pancreas. Boas¹¹ has observed 12 cases of diabetes among 366 cases of intestinal carcinoma, but he thinks the tendency of cancer to evoke diabetes is of the slightest.

The problems connected with diabetic coma, and especially the nature of the poison, still retain their interest. The older view that acetone was the toxic agent has given way to the belief that it is an acid derivative of this substance, probably beta-oxybutyric acid. It has been suggested by Bunge that owing to diminished alkalinity the blood is unable to take up CO_2 , and that this gas accumulates in the tissues and so gives rise to the symptoms of coma. As against this, Beddard, Pembrey, and Spriggs¹² have given the results of their examination of the gases in the blood of a case of diabetic coma; they found the CO_2 diminished, as was also the alkalinity of the blood; the two conditions ran parallel, and a similar condition, though less in extent, was present in non-comatose diabetic

patients. The amount of gas in the urine was not increased above the normal, while both diabetic blood and diabetic urine seemed able to take up a large quantity of the gas. These experiments, in the opinion of the authors, suggest that the respiratory symptoms of diabetic coma are not entirely to be explained by the assumption of a chemical disability of the blood to combine with CO_2 . Whatever the ultimate poison, it is generally recognized that acetone is a stage in its production, and the origin of this substance is therefore of importance; formerly it was supposed that it was derived from proteid substances, but this has been disproved by Weintraud and Hirschfeld and others. The present belief is that acetone is derived from fats, especially from butter; other fats and oils raise the amount eliminated less than butter. Satta¹³ has shown that the increase of acetone elimination ceases on the day following the disuse of butter. He attributes the result to the presence of lower fatty acids: washing the butter removes most of these acids, and thereby renders it more fit for the use of diabetic patients, in whose diet fat forms such an important part.

Fraser¹⁴ has again drawn attention to the association of fatty blood with diabetic coma; in a fatal case under his care the blood contained 16.5 per cent of fat, while there was as much as 20 per cent in the fluid found in the pleural cavities. He pointed out that the fat during life could not cause embolism, as it existed in the form of droplets so minute as to pass through the smallest capillaries, as was pointed out by Mr. Barling and myself twenty years ago.¹⁵ In the case under consideration the onset of coma was associated with diminished alkalinity of the blood and almost complete disappearance of sugar from the urine: while after death no sugar could be found in the blood. These facts point to the transformation of the sugar in the blood into beta-oxybutyric acid and fat.

It is interesting and important to note that the distinction between diabetic and non-diabetic glycosuria is gradually making its way, and it is to be hoped that in the course of the next ten years it will be less common to meet with cases of simple and even transient glycosuria mistakenly called diabetes. The debate last spring, under the auspices of the Chelsea Clinical Society,¹⁶ must have afforded material help in this direction. It was opened by Dr. Hale White, who began by pointing out that twenty years ago Dr. G. H. Savage and he had shown that

the reducing substance frequently met with in the urine of lunatics was not sugar, but he referred only to the glycosuria of exophthalmic goitre, the occurrence of abnormal excretion of lævulose, lactose and pentose, alimentary glycosuria, and that which is due to injuries or diseases of the nervous system, thus taking no account of the really more important cases of transient glycosuria in apparently healthy persons which are so apt to embarrass us in practice. He adopted Dr. Pavy's expression, "composite diabetes," to indicate true diabetes as distinguished from glycosuria, but it is a phrase which needs explanation. Pavy holds that in glycosuria there is merely a loss of sugar derived directly from the carbohydrates taken as food, whereas in true diabetes, or what he calls composite diabetes, the sugar in the urine is derived from breaking up of food or tissue proteids. That is to say, in glycosuria the withholding of carbohydrates should remove the whole of the sugar from the urine, whereas in composite diabetes this would not follow. The disadvantage of accepting this arrangement is that we should be using the term alimentary glycosuria to include a great deal that is generally regarded as diabetes. The quantity of sugar which can be used up in the body varies with each individual and with age: it is greatest in the young and diminishes as we get older, but its amount may be determined by experiment, and when the carbohydrate ingested is in excess of that which can be burnt off in the body, glycosuria will follow. It is usual to speak of alimentary glycosuria only in those cases where sugar appears in the urine as a consequence of a somewhat excessive use of carbohydrates, especially of sugar, by elderly people, and where on the moderation of the use of the article of diet in question the glycosuria disappears; but it would not be in accordance with custom to call a case one of alimentary glycosuria where it is necessary to withhold all carbohydrates from the diet in order to remove the sugar from the urine. Undoubtedly a case of diabetes in which the sugar disappears entirely on withholding carbohydrates is rightly regarded as being a fairly favourable one; but it is too often closely allied to the worst forms of diabetes for us to speak of it as merely alimentary glycosuria.

In Dr. Pavy's speech he expanded his view of diabetic and non-diabetic glycosuria, and illustrated the latter by quoting several cases which everyone would agree were not diabetes.

¹⁶The writer of the present paper, who followed Dr. Pavy,

held that we should not speak of glycosuria as diabetes when its cause is known, and especially when it is transient or removable; that is to say, if glycosuria is associated with cerebral tumour, cancer of the liver, a blow on the head, lactation, alcoholic debauch, or the presence of boils, and especially when it is transient, we should not call it diabetes. I again ventured to lay stress upon the importance of alcohol as a frequent cause of temporary glycosuria and sometimes of diabetes. After referring to the value of milk as an article of diet when given in small quantities, half a pint to a pint, I supported the use of **Potatoes** as a substitute for bread, and quoted the case of a man, aged twenty-one, who had lost 17 lbs. in weight before admission to the hospital; on strict diet he passed 1612 grains of sugar in 110 oz. of urine; the ferric chloride reaction was present, but no albumin; $1\frac{1}{2}$ lb. of potatoes (containing 2337 grains of starch) were added to his diet, after which the urine fell to 75 oz. and the total sugar to 1596 grains: the man left hospital against advice, and gained 5 lbs. in weight in the time. I gave two other cases, in one of which the patient was able to take $1\frac{1}{2}$ lbs. of potatoes together with $4\frac{1}{2}$ oz. of toast, and the other only 12 oz. of potatoes without toast, with in the first case total disappearance, and in the other great reduction, of the quantity of sugar. Potatoes are more agreeable, more digestible, more nutritious, and far cheaper than the bread substitutes in use, and contain less starch than the best of the old-fashioned gluten breads. I dwelt upon the importance of estimating the total amount of sugar excreted by a patient in twenty-four hours, instead of noting only the percentage, which varies with the quantity of urine, and of calculating also the total amount of carbohydrates taken as food, so as to estimate the relation between the two, in order to obtain a correct basis upon which to found our directions as to diet. I expressed disapproval of allowing patients to examine their own urine, and said that it was quite sufficient for them to weigh themselves once a fortnight, and submit a specimen of the twenty-four hours' urine once a month.

Dr. Rose Bradford thought that transient glycosuria was occasionally caused by extreme muscular fatigue, but recognised five forms of diabetic glycosuria: (1) Alimentary; (2) Hepatic; (3) Pancreatic; (4) Renal; and (5) From primary tissue changes. He drew attention to the disappearance of sugar from the urine some days before the supervention of coma, but did not allude

to the explanation already given, namely, that the sugar is probably transformed into oxybutyric acid and fat.

Dr. Robert Hutchison very properly laid stress upon persistence as a characteristic of diabetic glycosuria, and also the tendency of the condition to become progressively greater, but he recognised the difficulty of laying down a hard and fast line between diabetic and non-diabetic glycosuria. He attributed most, if not all, of the complications of diabetes to hyperglycæmia, a condition which could only be removed by diet. He thought the children of diabetic parents should be examined from time to time, so as to prevent them becoming hyperglycæmic. He recognised that in some cases glycosuria could be removed by limiting the amount of carbohydrates, in others these had to be completely withdrawn, while in a third and more serious class complete withdrawal fails to remove the sugar from the urine. It is these cases that Dr. Pavy speaks of as composite diabetes, in which sugar is formed from the proteid of the food; he thought it was very rare for patients to form sugar from tissue proteid. He was inclined to attribute the increase in diabetes to the great cheapness of carbohydrate food; mothers tend to feed their children upon an excess of carbohydrate food, while the importance of fat seems to be overlooked. It was quite possible to get a diet free from carbohydrates, which patients will tolerate for any length of time, provided they can afford to pay for it; in fact, he went so far as to say that "every diabetic should be a millionaire, because it is an expensive disease." Unfortunately, most of our patients are not millionaires, and the expense of artificial foods is so considerable that it is our duty as practitioners to look for simple substitutes, and not to multiply these artificial and by no means altogether satisfactory preparations. Dr. Hutchison admitted that potatoes would contain less starch than bread, and might be usefully employed as a bread substitute. He said, "starch is starch, and sugar is sugar, no matter where it comes from, whether it comes from potatoes or otherwise." This is surely an error; there is a difference in sugar; some sugars seem to be assimilated much better than others by diabetic patients, and it is quite probable that there is a difference in starches, as potatoes are borne by many patients better than an amount of bread containing an equal quantity of starch. Six ounces of potatoes, moreover, cheaply and agreeably replace bread with a meal, and are satisfying, while the amount (2 oz.) of toast or

bread containing an equal quantity of starch causes the patient to complain that he has not enough to eat.

Dr. Hutchison adverted to the value of **Alcohol** as a food in diabetes, but it is only to a very limited extent that it can be so regarded. He doubts whether **Codeia** is worth the money it costs, and asks whether **Opium** would not do as well?—a question which has been long ago answered in the affirmative by Prof. T. R. Fraser, Dr. Mitchell Bruce, and the present writer. He also thought that there were cases of glycosuria in which **Arsenic** did good, and he alluded to the interesting case recorded by Dr. Murrell in which **Thyroid Gland** removed the sugar from the urine. As the thyroid gland is the most powerful stimulant to metabolism which we possess, it would be a perfectly rational means to use if the non-appropriation of sugar were in any way due to metabolic failure.

Dr. Hector Mackenzie referred to the cases of candidates for life insurance presumably healthy, in whose urine sugar is found. His examples were such as most practitioners have met with, and it is to be regretted that he had so little to say by way of explanation. It is just these cases which are so frequently due to alcohol, not necessarily because the beverage taken contains sugar, but as the direct effect of the alcohol, for example, Scotch whisky; and this may occur in persons who are quite sober, and regard themselves as "careful livers."

Dr. William Ewart referred mainly to the treatment of diabetes in the young by what he called "hygiene," but the report of his speech gives no details. He mentioned the case of a girl of eighteen in which he had found exclusive milk diet extremely valuable in the early stages of treatment. Dr. C. C. Gibbes said that he had not found sugar to be present in cases of chronic venous congestion so often as the statements in text-books would imply. It is not quite clear what the speaker had in his mind, as everyone will agree that it is very exceptional to find sugar present in the urine of old-standing heart or lung disease, and where a reduction of copper takes place in such cases it should always be suspected to be due to excess of uric acid or other normal reducing substances, and these should be filtered out or some confirmatory test applied before the presence of sugar is admitted.

Dr. Hale White in his reply did not add much of importance. The result, however, must be to diffuse a wider knowledge of the forms of non-diabetic glycosuria, and although the definition

was rightly left not too tightly drawn, it will be sufficient to remember that no case of glycosuria should be called diabetes until it has been shown to be persistent, and the known causes of the presence of sugar in the urine have been excluded.

Last year, in recording the discovery of supra-renal glycosuria by Blum, his opinion was quoted to the effect that the capsules play an important part in the causation of bronzed diabetes, and a case of this nature was stated by Mimi to have been cured by the administration of tablets of **Supra-renal Gland**. Two cases of this disease, of which very full pathological reports have been published during the past year, do not support these opinions. The first is reported by Dr. J. M. Beattie.¹⁷ The man was ill at least two years before the bronzing of the skin was noticed. At the *post-mortem* examination the liver was enlarged and cirrhotic; the pancreas was enlarged and fibrous, but the supra-renal capsules appeared normal, except for a layer of pigment just below the capsule. The pigment, which was of two forms, that giving the iron reaction and that not giving it, was present abundantly in the liver, kidneys, pancreas, lymphatic glands, and supra-renal capsules, but was absent from the gastro-intestinal tract. The pigment in the cells contained iron, and that in the connective tissue did not. For reasons which do not appear in reading the case, Beattie advances the opinion that the disease is a distinct entity, and that diabetes is only associated with it as a late manifestation; he attributes the increase of fibrous tissue and the degeneration of cells in the liver, pancreas, and other organs to a toxin derived from the intestine, and explains the pigment in part by the inability of the degenerated cells to perform their metabolic processes properly, and in part to transportation to the liver and pancreas, whatever that may mean. He admits that the pigment may be to some extent the cause of the fibrosis.

The other case is recorded by Dr. George Parker. Nothing appears to have been known as to the relative duration of the glycosuria and the pigmentation; the man died of coma. The liver was cirrhotic, not enlarged; the pancreas was small and fibrous. The cirrhosis of the liver was monolobular, with pigment granules scattered about in the fibrous tissue and the cells. The supra-renal capsules were normal, except for a deposit of iron pigment in the cortex. He makes no distinction between pigment giving the iron reaction and any that does not do so; apparently all the pigment in this case gave the reaction.

Parker adopts Croftan's explanation of the relation of pigmentation to the advanced disease of the pancreas. Where trypsin is deficient normal transformation of hæmoglobin does not occur, but the latter is changed into hæmochromogen. If the liver is normal the pigment is removed, and only the symptoms of diabetes result, but where the liver is cirrlosed pigment accumulates and bronzed diabetes is developed ; that is to say, the occurrence of bronzed diabetes depends upon the accidental complication of pancreatic disease with cirrhosis of the liver ; according to this view the pigmentation is the consequence of the cirrhosis, and not its cause.

Prof. Tyson¹⁸ advocates the use of remedies which increase oxidation. He prescribes **Arsenic, Iron, and Chlorate of Potash**, with bathing, massage, and **Out-door Exercises**. While the drugs named may be of doubtful value, there can be no doubt that the other means should never be overlooked, although in advanced cases it may be necessary to limit the amount of exercise taken. Thus Kuelz found that although in early or mild cases walking uphill diminished the amount of sugar, in more advanced cases it increased this.

Dr. Williamson¹⁹ has published a few cases of mild diabetic glycosuria which were benefited by **Aspirin** given in large doses ; 15 grs. four, five, or six times a day ; he thinks it is best to commence with a small dose, 10 grs. two or three times daily, and to increase up to 15 grs. four or five times a day, and sometimes six times if no noises in the ears or toxic symptoms appear. He generally gave the drug in the form of a powder to be taken in a tablespoonful of water, to which 1 or 2 drops of lemon-juice are added ; he thinks it better to give the drug in a slightly acid fluid, for when not administered in this way he has known it to give rise to much gastric disturbance. He does not think that aspirin has a greater effect than sodium salicylate upon the excretion of sugar, but that it is borne better by the patient in the large doses that are necessary.

Prof. Eichhorst,²⁰ on the other hand, regards all drugs as useless, if not positively harmful, as they furnish the patient with a pretext for following his dietetic regimen less closely than he ought ; nor has he any faith in the use of mineral waters, for while admitting that after a season at Carlsbad or Neuenahr diabetic patients may show a considerable diminution or complete disappearance of sugar from their urine, he attributes the result to the rigorous diet to which the patients are obliged to submit

while at these places. He does not advise the use of alcohol in diabetes, but prefers—as calorific agents butter, lard, cream, ham, smoked salmon, fatty cheese, and sausage, which have the advantage of introducing a certain amount of variety into the patient's diet. As a drink he gives plain water or an alkaline water, acidulated with lactic or citric acid, or even undiluted milk. He allows tea and coffee, but thinks cocoa should only be permitted when it has been shown not to increase the glycosuria. He prefers not to put his patients suddenly upon a strict diet, but advises the gradual withdrawal of sugar and carbohydrates, and he regulates the quantity of these substances by their effect upon the patient; if the patient loses weight he allows them again. He weighs his patients regularly, as he considers that this affords the best means for estimating the success of the diet used. If the scales show that the patient is losing weight, the rigour of the diet must be lessened.

Dr. J. W. Allan²¹ has urged **Transplantation of the Pancreas** in diabetes; he speaks of a case in which he was going to try it, but although his communication appeared as long ago as last February, the result has not been made known. Mayer²² has used **Urotropin** in diabetic coma with good results. He gave 20 grains of the drug, and repeated the dose within half an hour, and continued to give from 20 to 60 grs. daily for several days. Four subsequent attacks were successfully averted by the same means, but the patient gradually lost weight, and died after the commencement of the fifth attack. This communication is very interesting, but a doubt is suggested by the statement that consciousness was never lost in the last attack, and we hesitate whether the former attacks were truly those of commencing coma.

Strauss²³ and Boyd²⁴ insist that it is above all things necessary that we should be certain that the substance present in the urine in doubtful cases is really *sugar*. As a rule we are contented with the copper test, and conclude that the reducing substance present is sugar, but there are so many other bodies which give this reaction that it is impossible to rely upon it in cases of doubt. Unquestionably the most satisfactory proof is that obtained by fermentation, as this affords direct evidence that a fermentable sugar has been present, and narrows down the possibilities to glucose, lævulose, maltose, and the fraudulent or accidental addition of cane sugar. Maltose and lævulose when present are always associated with glucose. Pentose does

not ferment ; its appearance in the urine is very rare, and has no relation to diabetes. Another excellent means of proof of the presence of glucose is by the formation of osazone crystals. The appearance of glucosazone crystals is quite characteristic, and can easily be recognized under the microscope.

In addition to the various sugars, the following reducing bodies may be met with in the urine : Glycuronic acid, uric acid, kreatinine, pyrocatechin, hydroquinone, salicylic acid compounds, chloral, chloroform, and similar bodies, none of which ferment or form osazone crystals. Moreover, they may be got rid of by filtering the urine through animal charcoal seven or eight times. This plan, though open to the objection that it may remove a minute quantity of sugar, is practically very useful in settling the nature of the reducing body in a doubtful case. It requires no other apparatus but a filter paper, a funnel, a little animal charcoal, and two test tubes. A few drachms of urine are filtered repeatedly and then re-examined for sugar by boiling with Fehling's solution. If the result is negative the conclusion may be drawn that the reducing agent previously present was not sugar.

Dr. Vasey²⁵ has recommended a method of obviating the difficulty that occurs with Fehling's solution by the suspension of the red cuprous oxide in the solution so as to mask the blue colour and render it more difficult to note when the reduction is complete. Pavy attempted to do this by adding strong ammonia, but the result depends upon the constancy of the amount of ammonia present, and it is difficult to maintain this, while Gerrard's cyanide process involves the employment of a solution of potassium cyanide, which is not stable. Vasey's method is to add about two teaspoonfuls of finely precipitated calcium carbonate or barium sulphate to the Fehling's solution ; this mixture is then raised to the boiling point and gently stirred with a glass rod during the whole time ; the solution in which the amount of sugar is required to be known is then run in after the usual manner, and it will be found that the red cuprous oxide will be deposited upon and evenly distributed through the slime, which rapidly subsides, so that the true colour of the clarified supernatant liquid is quite easily seen, and the exact point of transition from a trace of blue colour to a colourless solution can be sharply noted.

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⁵*Jour. of Phys.* No. 6, vol. xxvii ; ⁶*Amer. Jour. of Med. Sci.* April, 1902 ; ⁷*Lancet*, May 31, 1902 ; ⁸*Jour. Exper. Med.* vol. v, No. 5, p. 527 ; *Amer. Jour. Med. Sci.* May, 1902 ; ⁹*Jour. Med. Res.* vol. i, p. 360 ; ¹⁰*Wien. klin. Woch.* vol. xv, p. 969, 1902 ; ¹¹*Berlin klin. Woch.* March 16, 1903 ; ¹²*Lancet*, May, 1903 ; ¹³*Rif. Med.* Dec. 22, 1902 ; ¹⁴*Med. Press*, May 20, 1903 ; ¹⁵*Jour. of Anat.* July, 1882 ; ¹⁶*Clin. Jour.* April 22 and 29, May 6 and 13, 1903 ; ¹⁷*Jour. Path. and Bact.* Aug. 1903 ; ¹⁸*Univ. Med. Bull.* Sept. 1902 ; ¹⁹*Brit. Med. Jour.* Dec. 1902 ; ²⁰*Therap. Monats.* 1903 ; ²¹*Brit. Med. Jour.* Feb. 1903 ; ²²*Med. Rec.* March 8, 1902 ; ²³*Med. Woch.* Feb. 10, 1902 ; ²⁴*Scot. Med. and Surg. Jour.* Oct. 1902 ; ²⁵*Lancet*, June 20, 1903.

DIAPHRAGM, (Wounds of).

Priesley Lee, M.D., F.R.C.P.

Lenormant¹ has studied thirty-one recorded cases of wound of the diaphragm. In every case where the surgeon is certain that the diaphragm is wounded, with or without a wound of the viscera, he should intervene and repair the wound to prevent any subsequent hernia ; and Lenormant thinks that even if there is no certainty, but only a probability, the surgeon should interfere and expose the diaphragm by the trans-thoracic route, and partial resection of one or more ribs. Statistics show that in these cases laparotomy has given a mortality of 62.5 per cent, and thoracotomy only 13 per cent. When the wound is exposed the edges should be drawn together by direct suture.

REFERENCE.—¹*Rev. de Chir.* May, 1903.

DIARRHŒA, (Chronic).

Robt. Hutchison, M.D.

TREATMENT.—Songault¹ describes a method which he has found successful in the treatment of the form of chronic diarrhœa independent of any anatomical lesion, injection, or intoxication of any kind. The duration of such cases is usually very long, varying from months to years. It is not unusual to find a history of ten years' duration and more, where the affection has lasted since birth. In some cases diarrhœa occurs at intervals separated by periods of normal health, or occasional constipation. Persons so affected show a marked susceptibility to diarrhœa under the most trivial circumstances. The character of the stools varies to such an extent that it is possible to describe various types of the disease, but the most usual character is an extremely liquid state.

The writer has found that **Hydrochloric Acid** in considerable doses has proved beneficial. His method is to give from 10 to 20 drops of a 38 per cent solution. This dose must be taken at the beginning of a meal, in a little simple syrup. Intolerance is rare, but should the acidity of the dose make it difficult to

take, some white of egg may be added. In the worst cases the dose of hydrochloric acid requires to be larger. In two or three days some good effect ought to be apparent, certainly within a week. The colic disappears, the number of motions decreases, and they become more formed. It is advisable to continue the treatment for some considerable time, and to resume it on the least indication of relapse. The writer also emphasizes the importance of careful dieting.

Huchard² thinks that **Catechu** has fallen too much into disuse in the treatment of rebellious diarrhœas, especially those in which a milk diet is indicated. He prescribes it in the following forms :—

R	Powdered Catechu	gr. $2\frac{1}{4}$		White Honey	q.s.
	For one pill.	Five or six to be taken daily.			
R	Powdered Catechu	grs. $2\frac{1}{4}$		Powdered Opium	gr. $\frac{1}{4}$
	Sulphate of Quinine	grs. $2\frac{1}{4}$		White Honey	q.s.
	For one pill.	Two to be taken four times daily.			

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DIARRHŒA, INFANTILE.

(See "Gastro-intestinal Disorders of Infants.")

DIPHTHERIA.

E. W. Goodall, M.D.

J. Wicliffe Peck¹ gives a new differential stain for the Klebs-Löffler bacillus of diphtheria. "The film is spread in the usual way, fixed in the flame, stained with Löffler's methylene blue for from three to four seconds, washed quickly, then counter-stained with Vesuvian 0·2 per cent aqueous solution for thirty seconds, again washed quickly, dried, and mounted in Canada balsam. . . . This method gives a better result in all instances in which Neisser's acetic acid stain has been used, and it has this great advantage, that it is reliable for staining the Klebs-Löffler bacillus from a culture on blood-serum several days old.

. . . The common mouth organisms do not stain in the three seconds that are required, and neither the bacillus of Hofman nor bacillus coryzæ segmentosus stain by this method."

Bolton² has recorded two cases of optic neuritis following an attack of diphtheria. In one instance the patient was a boy four years of age, the other was a girl aged sixteen. The former patient was treated with antitoxin, the latter was not. The optic neuritis came on while the patients were suffering from post-diphtheritic paralysis, three or four weeks after the

attack of diphtheria. In both cases recovery took place. Optic neuritis is a very rare complication of diphtheria.

Diphtheria Antitoxin has hitherto been almost universally administered by subcutaneous injection. Dr. Louis Cairns,³ however, from observations made on 20 cases at the Belvidere Fever Hospital, Glasgow, has been led to advocate the **Intra-venous Injection**, in cases of the following nature: (1) Malignant forms of the disease, *i.e.*, those characterised by hæmorrhage from the nose or into the skin, by great glandular enlargement with marked cellular infiltration, and by extreme blanching of the skin; (2) Any marked involvement of the lungs; (3) Moribund condition of the patient; and (4) Profoundly toxæmic condition of the patient. He recommends the injection of from 20,000 to 25,000 units at once, the dose to be repeated in twenty-four hours if there is no improvement or if the patient gets worse. I think that he has made out a *prima facie* case for this method of administering antitoxin, though I do not think that he has by any means proved that it is really better than the subcutaneous method. As he frankly admits, twenty cases is a small number from which to draw conclusions in such a disease as diphtheria. Moreover, six of the seven cases of intravenous injection which are related at length, and which I suppose are selected as being good examples of the value of the method, were cases of faucial and laryngeal diphtheria with extreme asphyxia, and the operation of tracheotomy which was necessarily performed, went far to produce the marked alleviation which followed. Again, the absorption of the serum when injected subcutaneously, is certainly very rapid, though I admit that the serum cannot get into the general circulation so quickly as when it is injected directly into a vein. In favour of his views Dr. Cairns appeals to the analogy which he draws between diphtheria and plague. But the analogy is not a just one; and I am not at present prepared to admit that the organism of diphtheria is during life diffused through the blood and tissues so frequently as Dr. Cairns apparently thinks it is.

REFERENCES.—¹*Lancet*, Jan. 10, 1903; ²*Ibid*, Dec. 13, 1902; ³*Ibid*, Dec. 20, 1902.

DISINFECTION, (Hands, Sutures, etc.).

Priestley Leech, M.D., F.R.C.S.

Ordinary **Linen Thread** is highly recommended by Barker¹ for sutures; he has used it for the last two years in a large number

of cases, and says it has the following advantages ; it can be procured anywhere wherever there is a depôt for Singer's sewing machines : it is cheap, and can easily be sterilised by boiling, and stored in methylated spirits ; it is very strong, and ties a most uncompromising knot ; it is easy to work with, and runs easily through the eye of any needle. He has used several sizes, but now only uses three, viz., No. 40, which is as thick as need be desired for the abdominal wall or ligature of the larger arteries ; No. 60, which is thinner but still very strong ; and No. 90, which is as fine as can be desired, say for suture of the intestine. It is convenient to get No. 40 in white, No. 60. in red, and No. 90 in black. It is prepared by simply boiling it in water for an hour, and then storing it in spirits. Barker has tried it in enterectomy and gastro-enterostomy, and has never known it to fail. In a long skin incision, *e.g.*, in amputation of the breast, its non-irritating character can be well seen where it has not been tied too tightly, for it comes out just as it went in. *Cotton* thread is not strong enough for surgical ligatures, and moreover it rots if boiled much ; this linen material is different, and the flax fibre of which it is made is long and very smooth..

Reindeer Tendon prepared as advocated in last year's *Annual* has given very good and satisfactory results, and Stankiewicz² speaks well of it. Fresh methods for the preparation of **Catgut** continue to be published. Claudius³ uses the ordinary raw catgut wound on spools, and without any further preparation immersed in an aqueous solution of iodine and iodide of potassium, the formula for which is : one part of iodide of potassium is dissolved in a small amount of water, and an equal amount of finely powdered iodine is added. When this is dissolved enough water is added to make a 1 per cent solution. After eight days' immersion the material is ready for use. At the time of operation it is placed in a 3 per cent carbolic acid solution, or some indifferent sterile fluid, which washes off the superfluous iodine solution. The unused portion of catgut is returned to the iodine solution. Mayo Robson⁴ uses the following method. He takes the ordinary unmedicated catgut, or better the formalin catgut prepared by Messrs. Macfarlane, of Edinburgh (he used formerly the chromic catgut, but found it took too long to become absorbed) and undoes the constricting centre of each skein and reties it loosely. The skeins are then placed in a metal cylinder (made by Messrs. Down Bros.), the cap of which screws on, and after the cylinder has been filled with xylol the cap is screwed up very

firmly, as it is quite fatal to allow any water to gain access to the xylol, or to allow any of the xylol to escape. The cylinder is then placed in the steriliser and boiled for at least half an hour; the catgut is then kept in 5 per cent carbolic solution in methylated spirits. It keeps indefinitely, and when operating the ligatures are used out of 1 in 20 carbolised spirit.

The "Lister number" of the *Brit. Med. Jour.*⁵ is interesting. Bloch, of Copenhagen, takes "hydrophil" gauze out of an inner layer of filter paper, the outer layer having been removed by an assistant, and pours over it 3 per cent carbolic acid, which is then squeezed out, and the gauze placed on the wound and covered with a sterile bandage out of the same packet. The assistant then removes an outer layer of filter paper from a packet of sterile "hydrophil" cotton wool, the operator removing the inner layer of filter paper, and putting the cotton wool over the gauze. These packages covered with two layers of filter paper are sterilised by superheated steam in the disinfecting oven of the hospital, and are dried in the same oven. If the outer layer of filter paper remains intact it does not matter how black it is; the gauze is sterile. Bloch has examined some and found it sterile after a lapse of nine years. He also believes in drainage as the best means for removing fluids from a wound.

Watson Cheyne⁶ while finding no fault with the so-called aseptic method of surgery in theory, or if carried out by a trained bacteriologist, thinks it is a method which cannot be recommended for general use. The careful and intelligent use of antiseptics saves a great deal of trouble, makes the result more certain, and does not interfere in any way with the after progress of the wound. Catgut and silk are blamed for infecting a wound, when in many cases they are not the real infective agents, but are inert materials, which being soaked with putrescible materials, form a favourable nidus in which bacteria can multiply, ultimately infecting the whole wound. It is not the imperfect sterilisation of these materials which is at fault; it is that they are present in a wound to which bacteria have gained entrance through the employment of imperfect bacteriological methods. Gauze drains, he thinks, act as septic foreign bodies when employed in suppurating cavities, and it is much better to employ drainage tubes.

McBurney⁷ thinks **Indiarubber Gloves** should be used in every operation, and deprecates the use of antiseptics in wounds.

Morris, of New York,⁸ thinks the use of rubber gloves has been carried too far.

Herman⁹ states that the following requirements in addition to chemical disinfection are necessary for sterilising the surgeon's hands. (a) Take care not to bring the hands into contact with any septic material; (b) Keep the skin of the hands soft and smooth, as it is then more easily sterilised than when rough and lacerated; (c) Scrub the hands for at least fifteen minutes in running water. Mechanical cleansing is far more efficient than the action of chemicals; (d) The hands should be washed frequently during the operation in order to remove the micro-organisms which are constantly coming to the skin surface; and in hospital practice this is best done by washing them under a tap rather than in a basin.

R. B. Purves¹⁰ in a paper on disinfection of the hands says that the infective potentiality of the hands could be materially diminished by: (a) The use of gloves when out of doors; (b) By always washing the hands after examining cases; (c) By keeping the nails short, and (d) By wearing rubber gloves when operating on infective conditions, dressing septic wounds, or handling pathological specimens, and by using finger stalls for rectal, vaginal, and oral examinations. He also advocates a *nightly toilet* of the hands, viz., washing, thoroughly drying, and applying an emollient.

Morris¹¹ says the simplest and least irritating method of preparing the surgeon's hands is by taking a heaped up teaspoonful of commercial chloride of lime and an equal quantity of powdered carbonate of sodium; water is then poured on the powder in the hand, a paste being made from which chlorine gas is rapidly set free; by rubbing the paste over the hands for two or three minutes we get a complete sterilisation of the skin without much injury to the epithelium. The only objection is that if any of the mixture gets on towels or linen it injures the fabric. The simplest preparation of the patient's skin is the use of some of the sulphides as depilatories.

R. H. Dawbarn¹² recommends the use of indiarubber gloves. To prevent sweating, etc., by the skin a dry powder (lycopodium, stearate of zinc, or talcum with alum in proportion of 4 to 1) is rubbed in, and this stops secretion of the skin for some hours. The effect of the astringent is not only noticeable in the skin of the operation site, but also on the surgeon's hands. This powder is especially suitable for use in the genital region. For removing

the hair from the axilla and the pubes, he uses a 25 per cent solution of hydro-sulphate of sodium; the solution is faintly greenish in tinge, but is watery and unirritating; it completely removes the hairs without destroying them.

Dr. F. W. Andrewes¹³ brought forward at a meeting of the London Pathological Society observations relating to the resisting powers of *staphylococcus pyogenes aureus* against the persalts of mercury. A stain of this coccus on which he had experimented, had resisted 1 in 500 of perchloride of mercury for forty-five minutes in both cultures, and in pure water for twelve and a half minutes. By repeated passages through disinfectants a strain of coccus was produced which had even higher powers of resistance, and the final results were that the cocci resisted 1 in 500 perchloride of mercury in water for twenty minutes; 1 in 1000 in pure water for fifty minutes. Carbolic acid 1 in 40 killed the spores in less than two minutes; and 1 in 400 of medical izal in less than one minute.

REFERENCES.—¹*Lancet*, May 24, 1902; ²*Monats. f. Geb. u. Gyn.* Nov. 1901, *Brit. Med. Jour.* Jan. 31, 1903; ³*Deut. Zeits. f. Chir.* ⁴*Lancet*, Sept. 27, 1902; ⁵*Ibid.*, Dec. 13, 1902; ⁶*Ibid.*, Feb. 7, 1903; ⁷*Med. Rec.* April 19, 1902; ⁸*New York Med. Jour.* Nov. 22, 1902; ⁹*Cent. f. Chir.* Jan. 11, 1902; ¹⁰*Edin. Med. Chir. Soc., Lancet*, March 21, 1903; ¹¹*St. Louis Med. and Surg. Jour.* Jan. 1903; ¹²*Brit. Med. Jour.* Epit. Feb. 26, 1903; ¹³*Brit. Med. Jour.* Jan. 24, 1903.

DRUG POISONING. (See also "Opium Habit.")

Robt. Hutchison, M.D.

Datal¹ records a case of *chlorodyne* poisoning. The patient, a Parsi lad of 18, had taken $2\frac{1}{2}$ drachms of chlorodyne, containing $\frac{3}{8}$ gr. morphine (no proportion of hydrocyanic acid or other ingredient stated). He was insensible, cold and collapsed, radial pulse imperceptible. The left ventricle was markedly dilated, apex beat an inch outside the nipple line. Under treatment with injections of **Ether**, **Brandy**, and enemata of **Hot Coffee**, he completely recovered. After a few hours the dilatation of left ventricle entirely disappeared.

Wightwick and Rolleston² report a case of acute *trional* poisoning. Twenty-five tabloids of 5 grains each, or 125 grains in all, were taken by a woman aged twenty-nine. An hour and a quarter later she complained of feeling giddy and faint, was violently sick, and fell down unconscious. Two hours and a half after the initial dose she was profoundly comatose, very pale, and no pulse could be felt at the wrist. No knee-jerk or conjunctival reflex could be obtained, and the pupils were

widely dilated. Later she vomited repeatedly. For three days extreme drowsiness, pallor, small pulse, and marked cardiac failure persisted. The knee-jerks did not return till four days after taking the poison. The urine was normal throughout. Recovery was eventually complete. The treatment so successfully adopted consisted in **Washing out the Stomach**, first with weak **Permanganate of Potash** solution and then with a solution of **Bicarbonate of Soda**, with injections of **Strychnine**; later **Magnesium Sulphate** by the mouth.

Collatz³ recorded a case very similar as regards the quantity taken at one dose, *viz.*, 120 grains, and Berger⁴ one in which severe symptoms were ascribed to 60 grains taken within twenty-four hours; in the last case, however, it is not improbable, as Goldmann⁵ has suggested, that the patient, a medical man who had a considerable store of trional at his command, and was a victim of the opium habit, had really taken more. So far as can be seen from a study of the reported cases, there is a general resemblance between the symptoms due to the cumulative effect of trional taken for a considerable time, and those due to acute poisoning.

Connor⁶ reports an extraordinary case in which almost fatal symptoms followed the administration of 6 grains of *quinine*, the patient being a healthy man of twenty-seven. Fifteen minutes later he noticed a burning of the skin and fluttering of the heart. To these symptoms were soon added vertigo, faintness, tachycardia, and great weakness. When seen shortly after, he was conscious but gravely collapsed. On listening over the præcordium, faint heart-beats, too rapid to be counted, could be heard. The patient was given vigorous stimulation subcutaneously, together with external heat, and half an hour later the radial pulse could be felt, although still very feeble. The count at this time showed 180 beats to the minute. The burning and itching of the skin, which had been noticed early, gradually increased, and, about an hour after admission, there appeared over the trunk, extremities, and face, a diffuse scarlatiniform rash with much swelling of the skin, especially about the face. At this time the temperature was 100° F. Under very active stimulation the patient's general condition improved steadily, although the swelling, heat, and itching of the skin caused great discomfort and restlessness. On the following morning the eruption had well-nigh disappeared, and the patient, although still very weak, insisted upon going home.

Two days later the pulse rate was normal in rate and of fair force, but somewhat irregular, and occasionally intermittent. The patient still felt very weak, but was able to be about. There was still some unpleasant itching of the skin. At no time during the attack was there either ringing in the ears or deafness.

The patient volunteered the information that there existed in his family a distinct idiosyncrasy toward quinine. One sister had twice been violently poisoned by the drug, and had shown symptoms similar to his own. A brother had also shown the same susceptibility. On the other hand, a second sister and his parents had never displayed any such peculiarity.

Lloyd⁷ reports several cases of chronic *gas poisoning*. In one series, three patients in one family were successively attacked with vague and indefinite symptoms, to which no clue could be found, till it was discovered that there was considerable leakage from the gas-fittings. Removal to another house was followed by rapid recovery. While it is always difficult in such cases to prove cause and effect, it is probable that leakage of illuminating gas may be responsible for more ill-health than is usually believed. Yarrow⁸ supports this view, and says that the large increase in the use of gas for cooking purposes will add to the evil. He alludes to the fact that people engaged in gas-fitting soon lose their sense of smell as regards the odour of gas, unless it escapes in large amounts, and in the same way people living in a house with a constant small leakage, soon grow accustomed to its presence and cease to notice it. Carbon monoxide, as is well known, forms a very stable chemical combination with hæmoglobin, so that blood once impregnated with this deadly gas loses its power as an oxygen-carrier to the tissues of the body. The compound formed is of a bright florid crimson or purplish-red colour, totally unlike normal blood, which is more of a yellowish-red hue. It is the strong affinity that carbon monoxide possesses for hæmoglobin that renders recovery almost impossible in cases of severe poisoning by it. When an individual is exposed to a small but constant quantity of this gas, as from a leaky gaspipe or drain, the effect upon his health is soon apparent. The symptoms, though vague and misleading, may be summed up as follows: Anæmia, frontal headache (worse in the morning on rising), anorexia, tinnitus aurium, vertigo, foul taste in the mouth sometimes expressed as "gassy," abdominal pains, very often colicky in character, constipation, and persistent disorder of digestion. The patient

is weak, he "never feels well," although much improved when in the fresh air, which fact should excite suspicion as to the cause of his illness. The chronic form differs markedly from the acute, as in the former type the florid countenance is seldom or never seen.

Peruct⁹ gives an exhaustive account of *drug rashes*. He classifies these according to their local manifestations, and pertinently observes that it is the eruption we see, but the drug which caused it we have to find out. In discussing the differential diagnosis of erythematous eruptions, he insists that desquamation is not the peculiar appanage of scarlatina; it occurs also to a greater or less extent as a result of scarlatiniform rashes in general. In times of small-pox epidemics the premonitory scarlatiniform rash of that disease, which sometimes occurs about the abdomen, must be thought of. Scarlatiniform eruptions due to food poisoning, resulting from prolonged constipation, or following the absorption of toxic bodies liberated by enemata, or occurring in the course of gonorrhœa at times, may be mentioned here, as also the idiopathic erythema scarlatiniforme, so called when the cause cannot be made out.

Herpes zoster as the result of *arsenic* is not uncommon, and this fact proved of great practical importance, as it was zoster which first suggested to Dr. Ernest Reynolds the possibility of arsenic in the beer being at the bottom of the Manchester poisoning epidemic. Apart from zoster, vesicular and bullous eruptions were rare in the Manchester epidemic, but they have occurred more frequently in other arsenical poisoning epidemics. Zoster has also been seen in chorea, as well as in pernicious anæmia, and other diseases treated by arsenic.

In speaking of *bromide rashes*, he remarks that the diagnosis is one of great importance. A not uncommon error is to mistake them for syphilis, a great point being made of a negative history as to the administration of bromides. Histories, however, are fallacious, and it is well not to lean too hard on them. The confluent rash in children is characteristic, and it is important in such a case not to be misled by the negative replies of the mother, for cross-examination will often bring out the fact that the infant has had a soothing draught, or has been suffering from whooping-cough.

In the cases of infants, it is well to bear in mind the possibility of the conveyance of drugs to sucklings through the mother's milk. Of drug-rashes as a whole, he calls attention to the great

variety in their characters. The majority of them in their elementary form are common to other conditions. In only a few instances practically are they characteristic, as in the case of bromides and of arsenic. In the first-named the elevated lesions are so characteristic as to make a diagnosis possible on them alone. The pigmentation of arsenic is also very typical, especially in the earlier stages, when the minute white areas about the follicles on a dark background are seen.

The etiology of drug-rashes is complex. The special susceptibility of some individuals goes by the name of idiosyncrasy, a term which, like idiopathic, merely burkes the question of causation. It is always well, therefore, in such cases to pass to the various functions and habits of the individual in review, in the hope of obtaining a clue, which will sometimes be forthcoming, such as disturbances of the gastro-intestinal tract, constipation (especially in women), catarrhal conditions involving changes in the mucous membranes, dyspepsia in its protean forms. The state of the liver should be inquired into. Disease of that viscus, such as that following in the train of chronic alcoholic poisoning, for instance, may be a factor in the development of skin eruptions. Cardiac disease and renal inadequacy, leading to faulty elimination, are also factors. When albuminuria is present, the effects of some drugs may be disastrous. The nervous system, although its share in the production of rashes of all kinds has no doubt been over-rated, cannot be neglected, and it is well to bear in mind that the epidermis with its appendages, including the hair and nails, and the nervous system, central, peripheral and sympathetic, are all developed from the epiblast.

The diagnosis of these eruptions may be easy or difficult. In a general way, whenever an unusual-looking rash comes before you, the possibility of a drug-rash should be borne in mind. If the patient has been under your own care, the medication you have prescribed will occur to you. On the other hand, the patient may have taken remedies on his own responsibility, unknown to you, or may consult you for the first time on account of the rash. In all cases it is important to see as much of the eruption as possible. The duration, distribution, and mode of development, together with a general examination of the patient as to the condition of the various functions, are the points which will help you to arrive at a right conclusion. The duration alone will in some cases exclude the acute exanthemata, and

variation from the mode of invasion of the latter will also be of great assistance. The urine should always be examined. Inquiry as to a pre-existing skin disease should be made.

Poisoning from local application of Carbolic Acid.—Wainwright¹⁰ reports a case of a man of fifty, who for the relief of pruritus applied freely a 4% solution of Calvert's carbolic acid over the abdomen, pubes and thighs, and lumbar regions. Seven hours later, the anæsthesia having disappeared, pain was suddenly felt in the bladder, and this extended through the abdomen, rapidly becoming so severe as to cause great alarm, and requiring repeated hypodermic injections of morphine for its relief. Twelve hours after the application was made the patient became drowsy, and then would be awakened by severe lancinating pains. The urine was of the characteristic smoky appearance from carbolic acid poisoning, and there was great depression for three days, with evidences of acute nephritis.

Tea and Coffee Inebriety is the subject of some observations in the *Medical Press*.¹¹ The author considers that practitioners are not sufficiently imbued with the importance of the subject, and do not therefore recognize the symptoms and warn their patients against the ill-effects of repeated and habitual over-indulgence. Both tea and coffee contain comparatively high proportions of physiologically active ingredients, and when taken in excess they determine a well-marked deterioration of the digestive and nervous systems. Although theine and caffeine are stated to be chemically identical, the effects of the two beverages are by no means the same. This may be explained by the presence, in tea of a higher percentage of tannin, and in coffee of certain empyreumatic and volatile substances known collectively as *caffeine*. The action of these alkaloids is to stimulate the cerebral cells, inducing wakefulness and an ephemeral increase of mental activity, the spinal reflexes being at the same time enhanced, showing greater excitability of the spinal cord. The heart's action is at first strengthened, then rendered rapid and irregular, an effect which is thought to be due to their action on the medulla. The tannin exerts its recognized astringent effects on the digestive tract, and unquestionably hinders digestion and assimilation. The physiological effects of the alkaloids when taken in excess are stated to be: Insomnia, headache, mental depression, palpitation, and general debility, in association with chronic dyspepsia. The number of patients presenting a mild degree of intoxication is very large,

and unless the cause of the mischief is recognized, treatment will not afford more than passing benefit. The robust and otherwise healthy adult may be able to take tea without obvious ill-effects twice a day, but even this quantity, moderate as it would appear to many, is sufficient to cause symptoms in persons addicted to sedentary pursuits and already prone to dyspepsia. What then is to be expected when we find the average female taking from five to ten cups at odd hours throughout the day, especially as the appetite soon fails and a positive distaste for substantial food is created. Tremulousness associated with digestive disturbances, in the woman, is in the great majority of instances directly attributable to undue indulgence in tea. Although it leads to no characteristic organic disease as does alcohol, tea inebriety is destructive of health, and is unquestionably responsible for a large proportion of the cases of neurasthenia met with in women.

Datura poisoning in the Federated Malay States has been investigated by Gimlette.¹² He finds the symptoms produced by the various species in Europe and Asia to be largely similar. Death from datura poisoning seems to be comparatively rare, but the drug is often used by Asiatics for purposes of revenge, or for drugging victims with criminal intent. The raw seeds mixed with food or in tea are usually employed. The symptoms resemble those of atropine-poisoning—dry mouth, dilated pupils, rapid heart; insensibility often follows within a quarter of an hour. The effects may last for two days. Further investigation of the alkaloidal principles is required. He recommends **Washing out** the stomach with a solution of **Permanganate of Potash** (1 gr. to 1 oz.) in acute cases.

Enema rashes.—Bolton¹³ records an investigation into these. He finds they are less frequent when soft soap instead of hard is used in the preparation of the injections, and suggests the hard soap as the cause. Out of 903 enemas given in hospital during the investigation, 407 were made with soft soap and 496 with hard soap. Seventeen rashes occurred after the 496 hard soap enemas, but not one followed the use of the 407 made with soft soap.

Deaths from *antimonial poisoning* are so rare that Stevenson's reports¹⁴ on three acute cases are of special interest. In all *tartar emetic* was the substance criminally administered. Clinically the symptoms were those of an irritant poison, with marked vomiting, and abdominal pain and tenderness. The

post-mortem examinations in all three cases showed the evidences of acute gastro-enteritis, and large quantities of antimony were found in the various viscera on analysis. The preservative effects of tartar emetic were extraordinarily shown; in each case, buried respectively eight days, twenty-one months, and five years before the *post-mortem*, the usual signs of putrefaction were almost entirely absent. He remarks that this effect, though previously known, has been insufficiently recognized.

REFERENCES.—¹*Brit. Med. Jour.* May 16, 1903; ²*Lancet*, April 18, 1903; ³*Berlin. klin. Woch.* 1893; ⁴*Münch. Med. Woch.* 1895; ⁵*Ibid*: ⁶*Med. Rec.* April 4, 1903; ⁷*New York Med. Jour.* Aug. 23, 1902; ⁸*Med. Rec.* Sept. 1902; ⁹*Brit. Med. Jour.* May 16, 1903; ¹⁰*Boston Med. and Surg. Jour.* April 3, 1903; *Therap. Gaz.* July, 1902; ¹¹*Med. Press*, June 3, 1903; ¹²*Brit. Med. Jour.* May 16, 1903; ¹³*Clin. Jour.* Jan. 1, 1902; ¹⁴*Brit. Med. Jour.* April 11, 1903

DUODENUM, (Surgery of).

A. W. Mayo Robson, F.R.C.S.

Duodenal ulcer is not as yet sufficiently recognised, for in many cases it is entirely latent, or is associated with gastric ulcer. In many cases ulcer of the first part of the duodenum cannot be diagnosed from ulcer of the pyloric end of the stomach, and the first part of the duodenum as far as the entrance of the bile duct, bears a closer relation to the stomach than to the intestine, and stimulates the stomach in its diseases. This may possibly have some connection with development, as the entrance of the common bile duct marks the division between the fore gut and the mid gut.

Duodenal ulcer gives rise to three main symptoms—pain, disorder of digestion, and melæna. The pain, which is on the right side of the abdomen, most frequently occurs two to three hours after a meal, and is often relieved by food. The indigestion partakes rather of the character of hyperchlorhydria, and when the stomach contents are examined after a test meal, excess of free HCl is usually found. Hæmorrhage may occur in three forms: either a fulminating fatal form, in which death may occur within a few minutes of the onset of the bleeding, as I myself have seen it; or in a violent form, when blood may be both vomited and passed by the rectum, this form being apt to recur and to end fatally; or a chronic form in which the bleeding is more or less continuous, leading to profound anæmia. If the ulceration be near the bile ducts, jaundice not infrequently occurs. Perforation is not infrequent, and unless operated on is often fatal.

Duodenal ulcer resists treatment even more than gastric ulcer, and is very apt to relapse. Should it not yield to general treatment, which consists in absolute **Rest**, abstention from food and **Rectal Feeding** for a fortnight, with great care subsequently, surgical treatment is certainly indicated, and I can personally point to a considerable number of cases cured by the performance of posterior gastro-enterostomy, which acts by setting the duodenum at rest. The risks of this operation I can say from my own experience are under 5 per cent.

In a case of perforation, the sooner operation is performed, the greater the chance of recovery. A considerable number of cases have been reported where this lethal accident has been successfully cured by a laparotomy, with suture of the opening. Dr. W. J. Mayo, Rochester, U.S.A., has recently reported 26 cases of diseases of the duodenum submitted to operation. Eleven of these were dependent on ulcer; one acute perforating, two chronic perforating, five acute ulcers, and three that had caused cicatricial contraction with obstruction. Two died after operation. In three cases the signs and symptoms could not be distinguished from gall-stones, and the operation was undertaken under the supposition that the trouble was in the gall-bladder. In all the other cases the duodenal trouble was associated with gall-bladder disease, but in no case was malignant disease found.

Ulcer most frequently occurs in the first part of the duodenum. Out of 262 cases collected by Collin, 242 occurred in the first part, 14 in the second, 3 in the third, and 3 in the fourth.

Duodenal Fistula.—External duodenal fistula is fortunately rare, and may occur as the result of perforating ulcer or subsequent to duodeno-choledochotomy. If small, it may gradually close by granulation, as I have witnessed in two cases. If large it is a most distressing condition, usually ending in death from malnutrition.

Cackovié¹ has suggested one of three operations—duodenorrhaphy, gastro-enterostomy, and jejunostomy. The first of these, though a radical operation, is too severe in most cases, as the patient is usually very feeble in consequence of previous surgical treatment or of the failure of nutrition. With regard to gastro-enterostomy, it is pointed out that if the pylorus remains patent, the food may continue to pass into the duodenum. Jejunostomy is held to be the most suitable operation, as it is less dangerous, and a simpler method than either of the

other two, and allows a prompt and abundant supply of much-needed food.

Perforating Duodenal Ulcer following on acute Eczema in an infant.—Dr. Borland² has reported an extremely interesting case in which a baby eight months of age died from perforating ulcer of the duodenum, which he attributed to acute eczema from which the child had been suffering. He thought that the ulceration of the duodenum was due to the eczema, the relationship being similar to that shown occurring between extensive burns of the skin and duodenal ulcer.

REFERENCES.—¹*Brit. Med. Jour. Suppl.*, May 2, 1903; ²*Lancet*, Oct. 17, 1903.

DYSPEPSIA. (See "Gastric Disorders.")

EAR, (Diseases of.)

Jas. Kerr Love, M.D.

Acute Otitis media.—Bezold¹ writes on the treatment of this condition. The objects to be obtained are (1) The morbid products to be completely removed, or their rapid absorption assured; (2) The re-infection of the diseased cavities to be prevented; (3) Permanent and favourable conditions for drainage.

The first indication is met by the air-douche and paracentesis; the air-douche is to be used gently by catheter, and paracentesis is to be done very early. He uses the ice-bag, never uses leeches, irrigates with boracic acid solution, and afterwards dries the canal thoroughly. He protests against irrigations through the catheter, and the packing of the ear canal. The former of these proceedings is apt to carry infection to the middle-ear from the nose and naso-pharynx; the packing in the ear canal, Bezold thinks, becomes a soil for the detention of bacteria. He calls the external auditory canal a natural drainage tube, and would not obstruct it with gauze.

Chronic Otitis media.—Dench² discusses the various operative procedures for the relief of chronic suppurative otitis media, and their comparative value. The cases discussed are those of long standing which have resisted ordinary treatment. Such cases Dench believes to be due always to the presence of diseased bone within the tympanic cavity. Two methods of procedure are open to the operator: (1) Ossicectomy and curetting through the external auditory canal; (2) The mastoid operation, either by Stacke's method, or by the Stacke-Schwartz method. Dench's later experience tends to make him believe that conserva-

tive surgery in this region is a mistake rather than an advantage. He gives his own, Grunert's, Ludwig's, and Shröder's results of ossiculectomy, and shows that by this procedure over half the cases of chronic middle-ear suppuration are cured. He lays great stress on the removal of the smallest fragment of incus, and describes the method of searching for this bone. He further lays stress on the removal of the floor of the tympanic vault by rongeur forceps, and on the curetting of the tympanic cavity. He next describes the Stacke and the Stacke-Schwartz operation, and the arrangement of flaps by Stacke's, Körner's, and Panse's methods, and shows that the per-centage of cures after the radical operation is greater than after ossiculectomy. In his own cases 72 per cent of cures were obtained.

The Mastoid Operation.—Arnold Knapp and C. R. Jordan³ give a report on 40 radical operations done between Oct. 1900 and Oct. 1902 for chronic purulent otitis and complications. The method of operating was the Zanzf Kuster plan in most cases, the chisel being used principally, and the burr only for the smoothing of cavities. Skin grafting was carried out by Ballance's method with three successes. As complications, erysipelas occurred in four cases, pericarditis in one case; there was no case of facial paralysis. There were no prophylactic operations. Excluding special cases, the average time of healing was about three months. The hearing was often improved, sometimes remained stationary, occasionally was made worse.

Mr. C. A. Ballance⁴ makes a contribution to the subject of the operative treatment of chronic suppuration within the temporal bone. He lays down the principle that the radical operation should be undertaken whenever the ear suppuration persists in spite of careful antiseptic treatment carried out through the meatus, and condemns such measures as the curetting away of granulations, removal of ossicles, polypi, etc., except in quite exceptional cases, as not only inefficient but dangerous. During the mastoid operation, Ballance's practice is to remove the malleus and incus, and where possible to leave the stapes. He reviews the time over which the healing extends in mastoid cases, and thinks that the average estimate of three to four months is more favourable than the actual facts warrant.

He next proceeds to argue in favour of his method of grafting the antro-tympanic cavity, which he continues to modify in its details. The chief modifications now practised are:—

(1.) The flap is fashioned out of the meatus alone, so that no deformity of the concha is produced.

(2.) The anterior mastoid flap is shortened so as to prevent falling forward of the auricle.

(3.) An ordinary razor is used for taking the graft instead of what came to be known in the Glasgow Royal Infirmary as "Ballance's Cleaver."

(4.) The main mastoid cavity is not now grafted; the graft is only allowed to cover the inner wall of the tympano-attic-antral cavity.

(5.) Gold leaf is discarded as protection to the grafts, which are kept in position by tiny mops of sterilised wool covered with gauze.

(6.) A new third stage of the operation is added, which consists in the deliberate removal of the dead portion of the graft. This can be done by the meatus, but is best and most accurately performed under an anæsthetic. (For series of Stereograms specially illustrating the anatomy of the mastoid operation, see *Plates IV to XV.*)

Tuberculous disease of the Ear.—Dr. Milligan,⁵ who has done much valuable work in this department, recognises this condition as of primary or secondary origin, the latter being much the more common. He regards post-nasal adenoids as a principal cause of tubercular middle-ear disease, and found in a series of cases he examined that 16 per cent of naso-pharyngeal growths were of tuberculous nature. In acute cases of tuberculous middle ear disease, bacilli are only found in the early stages, for the infection soon becomes mixed, and the newer pathogenic organisms soon gain the upper hand. In the acute cases the deposition of miliary tubercles in the membranes cause multiple perforations. These coalesce and cause great destruction of membrane. In the chronic and common form of the disease there is no pain; at first the discharge is thin and scanty, then becomes thick, creamy and profuse. Granulations spring up which sometimes contain caseating areas. The typical objective phenomena are, multiple perforations, great destruction of membrane, early and rapid formation of granulation tissue, early enlargement of the glands surrounding the ear, and the occurrence of facial paralysis. The subjective symptoms are some deafness, some tinnitus, but not much, if any, pain.

A special feature of tuberculous disease is the liability to *facial paralysis*. In Milligan's cases nearly half (45 per cent) of the proved tuberculous cases had facial paralysis, whereas

he estimates that in non-tuberculous cases not more than 2 to 5 per cent showed facial paralysis. Another special feature of these cases is the readiness with which, and the extent to which carious erosion and destruction of the temporal bone may take place. Milligan considers enlargement of the periotic glands a most important indication of the nature of the case, such enlargement—excluding malignant disease—being uncommon apart from tubercular infection.

For diagnosis and treatment Milligan recommends **Tuberculin** in small doses in the early stages of aural tuberculosis. He finds intra-cranial complications not very frequent in tuberculous middle-ear disease, and that the younger the patient the worse the prognosis. With regard to treatment, he recommends operative interference where the general condition of the patient does not contra-indicate it, and tends to divide the operation into two or three stages; first opening abscesses and removing diseased glands, and ultimately making a serious effort at removing the disease. In a paper⁶ on this subject, read at the February meeting of the Otological Society, he summarises his conclusions as follows :—

(1.) That in all cases of middle-ear disease of suspected tuberculous origin search should be made for tubercle bacilli, either in the discharge, in tufts of exuberant granulation tissue, or in enlarged periotic glands.

(2.) That inoculation experiments (either subcutaneous or intra-peritoneal) afford a ready and reliable means of proving or excluding the tuberculous nature of the disease.

(3.) That a final and exact diagnosis is imperative, both from the point of view of prognosis and of treatment.

(4.) That tuberculous disease of the middle ear and accessory cavities is a frequent disease amongst infants and young children.

(5.) That the disease is most frequently found as secondary to tuberculous processes in other regions of the body.

(6.) That primary tuberculous disease of the middle ear is probably of more frequent occurrence than is usually supposed.

(7.) That the prognosis is always grave, but that in a certain proportion of cases suitably planned surgical intervention will eradicate the disease.

(8.) That in many cases it is advisable to conduct the operative treatment "in stages."

(9.) That when less than 10 per cent of hearing-power remains no attempt should be made to preserve the organ as an organ of

special sense. When more than 10 per cent of hearing-power remains in a patient otherwise in apparent health, a definite attempt should be made to preserve what amount of hearing-power still exists.

(10,) That where the tuberculous origin of the disease has been scientifically demonstrated, the case should be regarded as infectious, and precautions taken accordingly.

Wyatt Wingrave⁷ gives the results of a microscopic examination of 100 cases of middle-ear suppuration, with an analysis having special reference to the presence of tubercle and acid-fast bacilli. He concludes that acid- and alcohol-fast bacilli are demonstrable in a large proportion of chronic purulent ear discharges; that in seventeen cases they were presumably tubercle bacilli, in so far that they conformed to the recognised morphological and staining characters, and were for the most part associated with reliable clinical evidence of tuberculosis; that in seven cases, while conforming in greater or lesser degree to the staining requirements, they were morphologically unlike tubercle bacilli, yet five of these had either a family or personal history of phthisis; that success in their demonstration in a great measure depends upon methods of collecting and staining, with perseverance in search; that in the peculiar selective action of the squames in retaining the carbol fuchsin we have at once a possible source of error in diagnosis, and an explanation of the peculiar affinity of other bacilli for fuchsin.

Jobson Horne⁸ contributes an article on the clinical diagnosis and surgical treatment of tuberculosis of the temporal bone, considered with reference to the pathology and morbid anatomy of the disease. He summarises the clinical phenomena as follows:—

(1,) Absence of pain out of all proportion to the destructive character.

(2,) Insidious onset.

(3,) Marked loss of hearing power.

(4,) Extensive destruction of bone, rapid extension to labyrinth, absence of headache and dizziness.

(5,) Progressive and destructive character, leading, perhaps, to facial paralysis or even severe hæmorrhage.

(6,) Absence of intracranial complications.

(7,) And in a particular group of cases, considerable involvement of adjacent lymphatic glands.

Horne suggests that the absence of pain in tuberculous middle-ear disease is due to the disintegration of the bacillus and the

decomposition of its wax-like constituent—an alcohol being liberated which produces an anæsthetic effect. This is in contradistinction to the theory that the absence of pain is due to lack of pressure on nerve endings.

Horne concludes with the practical bearing which discrimination between primary and secondary infection has upon the surgical treatment. In the primary form, when the adjacent glands are involved, let these be removed, first attacking the more distal and least affected, the intention being to cut off the spread of infection, and so localise the focus of disease to be removed at a later date. When the disease is secondary to advanced pulmonary tuberculosis, a mastoid operation is seldom required; on the contrary, it is more likely to be what tracheotomy is to laryngeal tuberculosis—the beginning of the end.

Goldstein⁹ reports four cases of primary tuberculosis of the ear. All of them were seen more than three years ago; three of the four are still living, and careful physical examination fails to show any present tubercular affection. There are no evidences in their histories, or in their clinical development, either of acquired or hereditary tuberculosis in the families of the patients. Of the four cases, three involved the mastoid cells extensively, and showed an unusually active and rapid invasion. All of them developed from a pre-existing chronic suppurative otitis media, and appeared to be due to direct infection by the *bacillus tuberculosis*. In three cases where the mastoid operation was performed, the wounds healed by firm granulations, and all evidences of tubercular trouble ceased with the removal of the local process. This is in direct contrast to the healing of wounds where systemic tubercular invasion is present. The data all point to definitely localized specific infection of the cavum tympani and mastoid cells, with the characteristic development of a tubercular process as it occurs in bone tissue, and with the definite demonstration of the *bacillus tuberculosis* in each case.

Grimmer's¹⁰ contributions to this subject were noticed in last year's issue of the *Medical Annual*, and are of value in completing this review.

Ankylosis of the Stapes.—Dundas Grant and Stolte¹¹ give a translation and abridgement of Denker's report on ankylosis of the stapes. In a historical review the work of Valsalva, Morgagni, and Weckel is noticed, whilst special credit is given to Toynbee. It is, however, from 1885 onwards that accurate

knowledge regarding this condition has increased. The researches of Bezold, Katz, Politzer, and Seibenmann are noticed at some length. Denker next epitomises the symptoms and the pathological changes in the labyrinth and in the stapes which lead to the progressive deafness in these cases. With regard to causation, the view is supported that a primary ossifying osteitis in the periosteum is in progress, and it is shown that there is a peculiar susceptibility of the female sex to this particular disease. Denker believes that in many cases there is a rheumatic, gouty, scrofulous, or syphilitic dyscrasia present, and takes the view that it is often hereditary.

Almost all local treatment gives discouraging results. Denker thinks the large doses of phosphorus recommended by Siebenmann may cause phosphorus necrosis.

Internal Ear.—St. John Roosa¹² narrates a case of disease of the acoustic nerves, causing profound deafness, accompanied at a later date by pleuritic effusion and fibroid phthisis, and ending with recovery of hearing. The case ran a course of over a dozen years. Mercury, iodide of potassium, and pilocarpine were all of no avail, indeed the patient grew worse under them. Final recovery took place during the administration of **Strychnine**.

Dr. Paul Manasse¹³ describes two cases under the heading of a study of the pathology of the internal ear and auditory nerve. The first was one of disseminated grey degeneration of the auditory nerves, occurring in a patient who died of pulmonary tuberculosis. The multiple areas of grey degeneration were similar to those found in tabes, multiple sclerosis, and other similar affections. The degeneration was so extensive in both auditory nerves that the deafness could well be accounted for by an interruption of the conducting elements.

The second case was one of disease of the labyrinth and the auditory nerves in a syphilitic subject. The sound-conducting apparatus on both sides was normal, whilst almost the entire sound-perceiving apparatus was diseased. The changes consisted of the formation of a connective tissue network with a few stellate cells. Manasse thinks these are analogous to the periosteal inflammation which in syphilitic subjects affect the tibia and ribs. Ossification, which is common in such cases, had not taken place.

Tobacco.—Wyatt Wingrave¹⁴ calls attention to the effect of the excessive use of the stronger varieties of *tobacco* in producing deafness. His observations embrace 17 cases; all

subjects of *symmetrical* nerve deafness; an appreciation of low tones was deficient in eight. Tinnitus and vertigo were generally well marked. There was also marked impairment of colour sense in twelve, of which four had well defined scotoma. Deafness due to tobacco smoking may be conveniently classified in three groups, according to their etiology: (1) Mechanical or pneumatic; (2) irritative or catarrhal; (3) toxic or nerve deafness.

(1,) *Mechanical*.—This has its origin in the habit of smoking a tightly-packed pipe, cigar, or cigarette, especially in those suffering with nasal obstruction. A violent minus or negative naso-pharyngeal pressure is exerted with each inspiration, not only upon the Eustachian tubes, but also upon the blood and lymph vessels of the parts, so leading to hyperæmia, upon whose symptoms and treatment we need not dwell.

(2,) *Irritative or catarrhal*.—This form is very familiar in the early morning cough and expectoration of habitual smokers. It is caused by the chemical and mechanical irritation of the smoke on the mucous membrane, extending along the Eustachian tube, and inducing also hypertrophic changes.

(3,) *Toxic or nerve deafness* is due to the gradual accumulation of certain toxins of tobacco in the system. This poison is undoubtedly cumulative, since complete abstinence is essential to effecting any permanent improvement; mere reduction in the quantity consumed, or of its strength, generally proves unsatisfactory.

Treatment consisted of complete abstinence from tobacco in every form, with the administration of **Strychnine**, **Quinine**, or **Bromides**. Quinine and bromides, separately or combined, afforded no appreciable effect, but strychnine pushed to full doses proved more successful. Three severe cases were completely cured in eight, nine, and twelve months respectively; nine showed marked improvement; two improved only slightly; and two refused to continue treatment. That the improvement was in a great measure due to arrest of smoking, was shown in several cases, which always relapsed on resuming the habit, although strychnine was persisted with. Improvement was again marked on abstaining from tobacco.

Wingrave emphasises the following points: (1) That all were well-marked cases of nerve deafness (unattributable to other causes) occurring in heavy smokers. (2) That the loss of low-tones in 50 per cent suggests the auditory equivalent for a

well recognised ocular lesion. (3) That there was definite scotoma in four cases, and impaired sensation of vision in eight of them. (4) That the disease was symmetrical. (5) That 80 per cent showed marked improvement on abstinence from tobacco, and, supplemented by drug treatment, three were cured. But the habit was so strong and the will so weak, that the forecast is not always encouraging.

Deaf-mutism.—Schwabach¹⁵ makes a contribution to the pathology of this condition. The patient was a man of thirty-five, who died of acute military tuberculosis. The right temporal bone was microscopically examined. In the basal turn of the cochlea were found bone and connective tissue formations, with destruction of the expansions of the auditory nerve. In the other parts of the cochlea the changes were either slightly marked or were absent altogether. In the vestibule and semi-circular canals the bony parts showed no change, and the changes in the membranous parts may either have been pathological or may have occurred *post mortem*. In the middle ear were evidences of an old purulent otitis and of a more recent and fresh tuberculosis of the tympanic mucous membrane.

The Deaf, and Life Assurance.—Dr. J. E. Spalding¹⁶ discusses the question, Should the deaf be debarred from accident insurance? He considers that owing to the greater care which the deaf person takes of himself because of his defect, to his better perception of sounds in the noise of the streets than in the case of those who can hear, and to his bone conduction, whereby he early becomes aware of approaching danger, he is as good a risk against pedestrian accidents as those who can hear well.

Bacteriology and Ear Disease.—Wendell Philips¹⁷ gives a brief history of bacteriological examinations in suppurative otitis media, with remarks on the relative virulence of the various micro-organisms. He enumerates twenty-one separate micro-organisms, and gives the names of the observers who first noted the presence of each in ear disease. He states that in his experience the *streptococcus* has been found the most virulent of all the pathogenic organisms found in purulent otitis. In middle-ear suppuration threatening the mastoid or attic, he rarely attempts to abort, but proceeds to operation at once, should the streptococcus be found. The next most virulent type is the *diplococcus intercellularis meningitidis*, and in this he recommends about the same course of treatment as in strepto-

coccus cases. The *staphylococcus* usually occurs in combination, and generally with streptococcus. The *pneumococcus* is frequently found, but is not especially virulent. It is probably the most commonly present of any micro-organism in purulent otitis media.

Among other contributions of interest are: Von Zur Muehlen¹⁸ on "After Treatment of Radical Operations without packing." Kamm¹⁹ on "Acute Mastoiditis complicated by Scleroderma." Eulenstein²⁰ on "Hæmorrhage from Arrosion of the Brain Sinuses in Suppuration of the Temporal Bone." Treitel²¹ on "Recent Theories on Sound Conduction." Kerrison²² on "The Limits of Variation in the Depth of the Mastoid Antrum." Stein²³ on "The Differential Diagnosis and Treatment of Osteo-Sclerosis of the Mastoid Process." Kerr Love²⁴ on "The Method of Dealing with and Developing the Residual Hearing Power and Speech of the Deaf." Jones²⁵ "Guides to the Surgical Relations of the Facial Nerve, etc., in the Temporal Bone." Dundas Grant²⁶ on "The Varieties of Chronic Non-suppurative Disease of the Middle Ear." Grant Andrew²⁷ on a "Case of Cerebellar Abscess following Ear Disease." McLeod Yearsley²⁸ on "The Indications for the Mastoid Operation." Mayo Collier²⁹ on "Optic Neuritis with Paralysis of the External Recti following Middle Ear Disease."

REFERENCES.—¹*Arch. Otol.*, vol. xxxii, No. 1; ²*Amer. Jour. Med. Sci.*, Nov., 1902; ³*Arch. Otol.*, vol. xxxii, No. 2; ⁴*Lancet*, April 11, 1903; ⁵*Med. Press*, March 4, 1903; ⁶*Jour. Laryng. & Otol.*, March, 1903; ⁷*Ibid*; ⁸*Ibid*; ⁹*Ibid*; ¹⁰*Medical Annual*, p. 264, 1903; ¹¹*Jour. Laryng.*, Sept., 1903; ¹²*Med. Rec.*, Jan. 31, 1903; ¹³*Arch. Otol.*, vol. xxxii, No. 2; ¹⁴*Med. Press*, Feb. 11, 1903; ¹⁵*Arch. Otol.*, vol. xxxii, No. 5; ¹⁶*Ibid*, vol. xxxii, No. 4; ¹⁷*Ibid*, vol. xxxii, No. 1; ¹⁸*Ibid*, vol. xxxii, No. 2; ¹⁹*Ibid*; ²⁰*Ibid*, vol. xxxii, No. 5; ²¹*Ibid*; ²²*Ibid*, vol. xxxii, No. 3; ²³*Ibid*; ²⁴*Jour. Laryng.*, Aug., 1903; ²⁵*Ibid*, June, 1903; ²⁶*Ibid*, May, 1903; ²⁷*Brit. Med. Jour.* May 2, 1903; ²⁸*Med. Times and Hosp. Gaz.*, Jan., 1903; ²⁹*Med. Press*, June 11, 1903.

ECLAMPSIA, PUERPERAL.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

ETIOLOGY.—Fothergill¹ gives a clear and interesting summary of the principal theories held at present on the causation of eclampsia. The most widely accepted is the view that eclampsia is the result of the circulation in the blood-stream of a poison or poisons of which the exact nature is unknown. These poisons are supposed to enter the blood in one or both of two ways: either they may be absorbed from the alimentary canal of the patient, or they may be due to the chemical changes

STEREOGRAMS ILLUSTRATING THE SURGICAL ANATOMY OF THE EAR.

JAMES KERR LOVE, M.D.

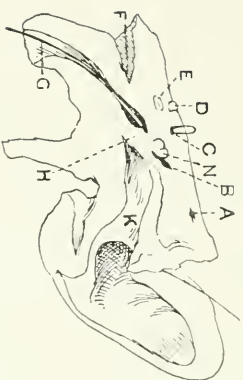
The stereograms here given form part of a series made to illustrate the mutual relations of the structures dealt with during the performance of the Mastoid Operation. During the past few years this operation has been much more commonly done for suppurative disease of the middle ear, and it is hoped that the illustrations will prove of use to the surgeon. For facilities to photograph specimens *Plates IV. and VI.*, and for permission to publish them as illustrations, the writer is indebted to the Senate of the University of Glasgow ; and to Dr. John H. Teacher. They are from the Hunterian museum of that University. The rest of the specimens are from the writer's own collection.

*To Use the Stereoscope.**—The instrument should be held nearly close to the eyes, and the glasses parallel with them, looking at the photographs through the centres of the lenses, commencing about twelve inches from the picture. At this distance three indistinct pictures will appear. Directing attention solely to the middle one, the picture should gradually be approached, till the centre image is seen distinctly or “in focus.” If the eyes, the lenses, and the photographs are truly parallel, the two images should now form one picture in bold relief ; if not, the attention should be concentrated on some prominent detail of the picture, and by slightly tilting the stereoscope if either image of it appears higher or lower, the two be brought into one horizontal plane. The observer's vision will then swiftly “accommodate” any slight lateral separation, and bring the selected “point of sight” into one image, when the effect of relief will immediately appear. After using once or twice the proper effect will be obtained without difficulty.

* For readers who have no suitable stereoscope the Publishers provide a simple but effective instrument. Price 2-.

PLATE IV.—DISSECTION TO SHOW THE WHOLE ORGAN OF HEARING.

The squamous portion and the upper part of the petrous have been removed by a saw-cut passing from above and behind the external ear, obliquely forwards and inwards. The anterior walls of the external auditory meatus, tympanic cavity, and Eustachian tube have also been removed. (*Hunterian specimen*).



- A. Mastoid antrum.
- B. Part of tympanic attic.
- C. Vestibule with bistle in it.
- D. Eighth nerve in internal auditory meatus.
- E. Cochlea
- F. Carotid canal with bistle tied in it.
- G. Eustachian tube with bistle tied in it.
- H. Tympanic ring.
- K. External auditory meatus.
- N. Auditory ossicles.

PLATE IV.



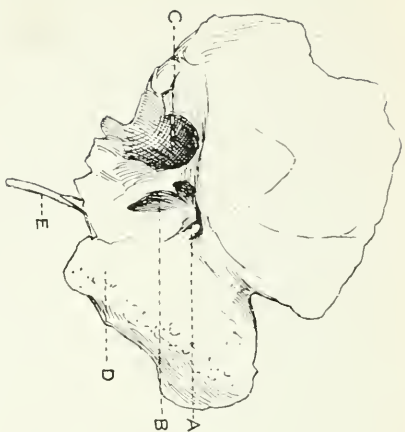


PLATE V —LEFT TEMPORAL BONE (*To show Henle's spine.*)

- A. Henle's spine with fossa behind it.
- B. External meatus.
- C. Glenoid fossa.
- D. Mastoid process.
- E. Styloid process.

PLATE V.



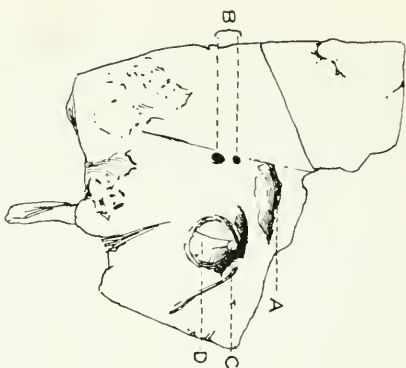


PLATE VI.—VERTICAL SECTION OF RIGHT TEMPORAL BONE.

Made in a plane parallel to and three-quarters of an inch in front of the upper border of the petrous portion. A wedge-shaped portion has also been removed from the cut surface, to show the mastoid antrum.

- A. Mastoid antrum with the attus in its fore part.
- B. Mastoid cells.
- C. Short process of malleus.
- D. "Cone of light."

PLATE VI.

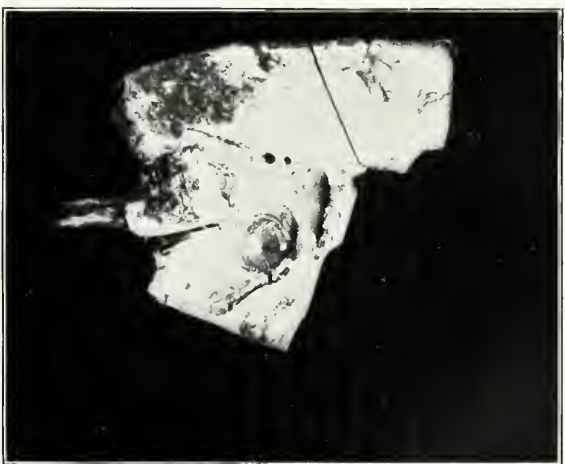
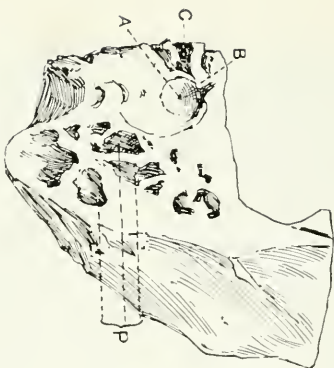


PLATE VII.—PNEUMATIC MASTOID PROCESS.



Vertical section through a left temporal bone showing the mastoid cells (P) to be of very large size. The saw-cut passes through the external auditory meatus close to the membrana tympani, which is seen in its natural position.

The conical appearance of the membrane is well shown with the apex (A) occupied by the lower extremity of the handle of the malleus (the umbo). At the upper extremity of the handle is a well marked process (B) the short process of the malleus. The bone has been broken somewhat immediately above and in front of the membrane; and the letter (C) is at the entrance of the Eustachian tube into the tympanum.

PLATE VII.



PLATE VIII.—DIPLOÏTIC MASTOID PROCESS.

A saw-cut has been made to pass through the mastoid process of the right temporal bone, parallel with the side of the head. The diploëtic cells are seen to form the bulk of the mastoid process, hardly any of the cells being larger than a pea.



The specimen also shows well the linea temporalis (A) which marks for the operator the floor of the middle fossa of the skull. Between the linea temporalis and the mastoid cells, above and behind the external auditory meatus, are seen Henle's spine (B) and the supra-spinous fossa. The anterior wall of the external auditory meatus (C) (the tympanic plate formed from the tympanic ring) is well seen, and its proximity to the articular surface for the lower jaw should be noted.

PLATE VIII.

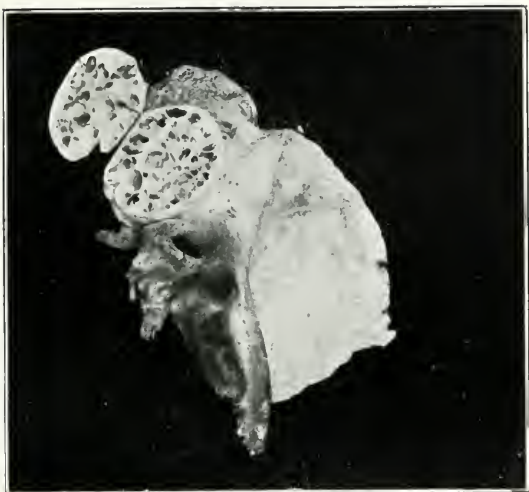


PLATE IX.—LEURNATED MASTOID PROCESS.

The mastoid has been divided by a saw-cut through its axis, *i.e.* passing obliquely from the tip upwards and backwards.

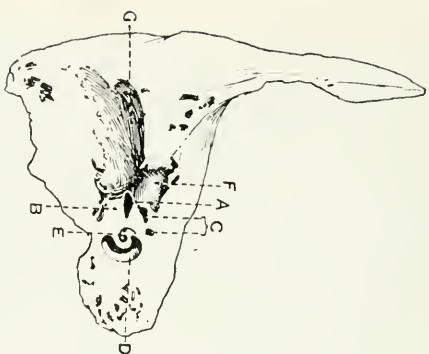


The cells (A) thus exposed are seen to be of very small size, in no case larger than a pin's head. The groove for the sigmoid sinus can be seen (B) immediately internal to the line of section, which passes obliquely through it.

PLATE IX.



PLATE X.—VERTICAL TRANSVERSE SECTION THROUGH TEMPORAL BONE, SHOWING COCHLEA.



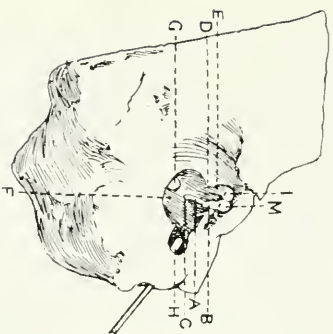
- A. Fenestra ovalis.
- B. Promontory.
- C. The fenestra rotunda is obscured by the promontory owing to the position in which the photograph is taken.
- D. Aqueductus Fallopii shown in two positions, owing to the saw-cut having passed through the "knee."
- E. First turn of cochlea.
- F. Second turn of cochlea.
- G. Tympanic attic.
- H. External meatus.

PLATE X.



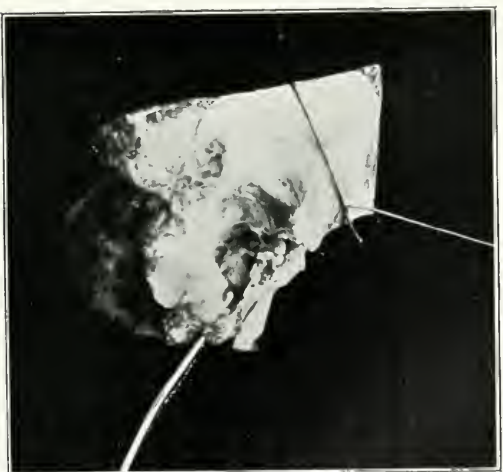
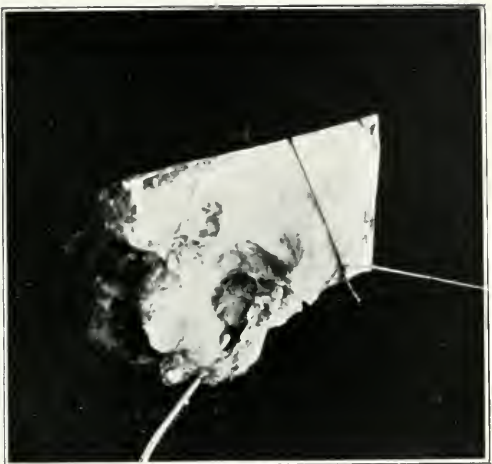
PLATE XI.—LEFT UPPER TEMPORAL BONE.

With the anterior parts of the tympanic ring removed, and a probe placed in the Eustachian tube. The position of the ossicles is well shown, lying, as they do, with the greater part of them in the attic of the tympanum and above the level of the upper wall of the external meatus.



- A. Handle of malleus.
- B. Short process.
- C. Umbo.
- D. Long process of incus receding from the tip of which are the crura of the stapes, the view of posterior crus being covered by the tendon of the stapedius muscle, which is well seen as it passes back to the apex of the pyramid.
- E. Chorda tympani nerve.
- F. Promontory.
- G. Foramen rotundum
- H. Eustachian tube with probe in it.
- I. Head of incus articulating with head of malleus (M).

PLATE XI.

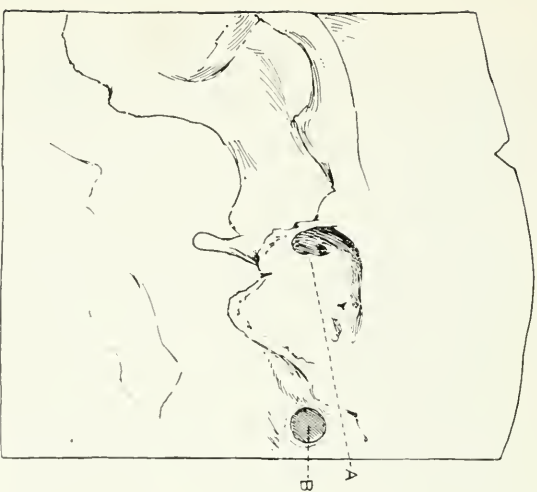


All three semi-circular canals have been laid open : the posterior (A) and superior (B) are easily recognised from their positions, the external (C) lies obliquely between the two. The facial nerve (D) represented by a bristle, is seen at first within the middle ear, but afterwards passing backwards and downwards within the opened Fallopian canal, towards the stylo-mastoid foramen. Within the middle ear a small ring of the bony canal has been left, and below the opened part of the canal is seen the oval window (W). The canal for the tensor tympani muscle (F) is seen passing downwards towards the Eustachian tube. The mastoid emissary vein is represented by a piece of knotted string (G) which projects from the foramen about three-quarters of an inch behind the tip of the mastoid process.

PLATE XII.



PLATE XII.—TO SHOW THE "COMPLETE MASTOID OPERATION."



The mastoid antrum was first opened and then the "bridge" of bone forming the outer wall of the aditus was removed. The mastoid cells were then ablated backwards and downwards towards the periphery of the mastoid.

A. The facial ridge is well shown, the dense bone forming it contrasting well with the looser texture of the mastoid in its neighbourhood. The wedge-like shape of the cavity formed (the thick end of the wedge being at the antrum) is also well illustrated.

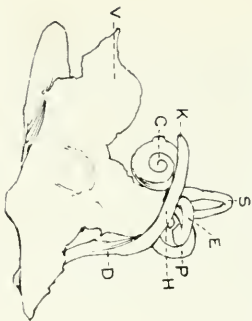
B. The circular opening in the bone behind the mastoid indicates the situation for trephining in cases of cerebellar abscess.

PLATE XIII.



PLATE XIV.—WAX CORROSION PREPARATION OF THE LEFT TEMPORAL BONE.

Viewed from the front and outer side, showing the facial nerve in its whole course from the "knee" to the stylo-mastoid foramen, and its relation to the cochlea and semi-circular canals.



- K. Knee of facial from which the VIIth nerve comes off
- H. Horizontal portion and (P) descending or vertical portion of facial nerve. The bend between (H) and (P) is the part situated at the junction of the floor and inner wall of the aditus, and so is liable to injury in removing the "bridge" in the radical operation.
- C. Cochlea.
- S. Superior (P) posterior and (P) external (or horizontal) semi-circular canal.
- V. Jugular bulb.

PLATE XIV



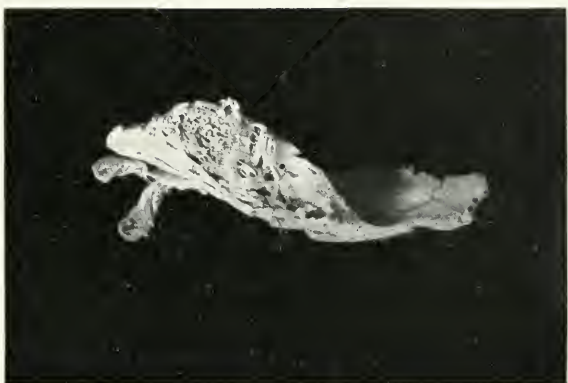
PLATE XV. THE MIDDLE AND INTERNAL EAR,

Showing artery accompanying auditory nerve injected. (*Hunterian specimen*.)



- A. Head of incus and (b) head of malleus with a black bristle passing between them, below the articulation.
- D. Stapes disarticulated from incus. (A bristle can be seen behind it placed in position of the stapedius muscle).
- E. Aditus leading up to the antrum
- F. Cochlea.
- G. Auditory and facial nerves together with injected artery accompanying them.

PLATE XV.



in her tissues, collectively known as metabolism. It is held that the pregnant woman is specially liable to intoxication, because her organism has to deal not only with the waste products of her own tissue-changes, but also with those due to metabolism of the fœtus. Poisons passed into the blood are, in health, dealt with by various "organs of defence," being either changed into innocuous substances or at once expelled from the body. A break-down on the part of any of these will throw the whole mechanism out of gear. Suppose, for instance, that the liver fails to deal completely with a toxin absorbed into the blood from the alimentary canal. The poison remains in the blood and passes through the kidneys. These excrete it for a time, it may be, and then themselves become irritated and injured, so that they fail in their own functions. The result of this breakdown in the renal function, secondary to a primary failure of the liver, is to leave the poisonous substances circulating in the blood, together with a certain amount of urea which the injured kidneys fail to excrete. The next phase in the sequence of events is the appearance of albumin in the urine. Then, if the condition be not relieved by the end of pregnancy, or by appropriate treatment, serious results may follow, one of which is eclampsia.

A few writers, such as Müller² and Albert,³ have advanced the view that eclampsia is a general intoxication derived from micro-organisms in the uterus. There is at present no positive evidence in support of this view. Another interesting and suggestive theory is that of Oliphant Nicholson,⁴ who believes that the principal symptoms of the eclamptic state can be explained in terms of thyroid inadequacy. The thyroid gland is enlarged in normal pregnancy; but this enlargement can be diminished or prevented by giving thyroid extract. A larger supply of iodothylin is needed in the pregnant than in the non-pregnant state. Lange observed that albuminuria and eclampsia occurred in 20 out of 25 cases in which the usual thyroid hypertrophy of pregnancy did not occur.

Fothergill gives the following *resumé* of Nicholson's views:—

It is generally agreed that the eclamptic symptoms are dependent upon an auto-intoxication, and it may be assumed that iodothylin is essential to the efficient working of all the parts of the defensive mechanism. Iodothylin favours metabolism, and increases the excretion of urea. In eclampsia this is strikingly diminished. Owing to a deficiency of iodo-

thyrim, it is thought, the metabolism of nitrogenous substances stops short of the formation of urea, at a point where the products are highly toxic. The clinical features of a typical attack of eclampsia resemble those of complete athyroidia, as caused by the removal of the thyroid gland in animals. Eclampsia may thus be regarded as a temporary athyroidia. The resulting toxæmia may be slight or severe, short or prolonged. While the athyroidia lasts, the liver and the other organs cannot make urea for the kidneys to excrete, but instead nitrogenous substances are only turned into toxins, which injure the kidney, and cause various other lesions and symptoms.

Many cases doubtless occur in which the poisons are formed, but in which the kidneys, though injured, remain able to defend the organism from profound intoxication. There are several ways in which thyroid inadequacy may affect the renal function. Thus iodothyrim may be regarded as a diuretic. Again, urea, for the formation of which an adequate supply of iodothyrim is necessary, may be regarded as the diuretic *par excellence*. Thirdly, iodothyrim is a powerful vaso-dilator, and may act on the renal function by maintaining dilatation of the renal blood-vessels.

It is evident that the real significance of the pre-eclamptic state is that it points to a breakdown of some part of the defensive mechanism. Furthermore this breakdown is the result of some inadequacy of the thyroid and parathyroid glands, whereby the process of nitrogenous metabolism, instead of resulting in the formation of urea, ceases with the production of intermediate substances which, when absorbed, excite the symptoms of a toxæmia. In this way the degree of toxæmia of pregnancy comes to be dependent, directly or indirectly, upon the quantity and activity of the thyroid secretion.

TREATMENT.—In cases in which rapid emptying of the uterus is indicated, either before the onset of labour or during its progress, favourable results from the use of **Bossi's Dilator** are reported by Lederer,⁵ Keller,⁶ Simpson,⁷ Frost,⁸ Ballantyne,⁹ and Helme.¹⁰ On the other hand, Dührssen¹¹ advocates vaginal **Cæsarean Section**, reporting a case in which the operation required but eight minutes, and mother and child recovered. It must be remembered, however, that it has recently been shown by Herman (see *Medical Annual* for 1903, p. 569), that rapid emptying of the uterus is by no means always the best treatment, and does not always even arrest the fits.

Fothergill (*op. cit.*) expresses views in accord with those of Hermann, and defines the indications and limitations of operative obstetric interference in eclampsia, by considering the three conditions in which the question may arise:—

(1.) As a prophylactic measure, induction of labour is allowable in the “pre-eclamptic state.”

(2.) When the attack comes on during labour, dilatation being already considerably advanced, everyone is agreed that obstetric treatment should be continued almost as if there were no eclampsia.

(3.) When convulsions come on before labour, or when labour has only just begun, Fothergill is of opinion that operative obstetric treatment is contra-indicated.

It is a natural corollary to Nicholson's views on the part played by the thyroid gland in the causation of eclampsia, that he should advocate the administration of **Thyroid Extract** as a prophylactic measure. He says, “Thyroid extract is of great value as a prophylactic remedy, to readjust the process of metabolism when the first indications of a break-down appear, without waiting for albuminuria.”

Thyroid extract is also recommended in the presence of actual eclampsia, but in that case it must be given in large doses, and pushed to the point of inducing “thyroidism.”

Beyond this there is nothing new to report in the medicinal treatment of eclampsia. Favourable results from the injection of **Saline Solution** continue to be reported. In a case recorded by St. Johnston¹² the beneficial effect appears to have been marked and strikingly rapid.

REFERENCES.—¹*Pract.*, Feb., 1903; ²*Arch. f. Gyn.*, vol. lxvi, part 2, 1902; ³*Ibid.*; ⁴*Jour. of Obst. and Gyn.*, July, 1902; ⁵*Arch. f. Gyn.*, vol. lxvii, p. 711, 1902; ⁶*Ibid.*, p. 723; ⁷*Brit. Med. Jour.*, Nov. 29, 1902; ⁸*Ibid.*; ⁹*Ibid.*, Feb. 21, 1903; ¹⁰*Ibid.*, April 11, 1903; ¹¹*Cent. f. Gyn.*, April 18, 1903; ¹²*Brit. Med. Jour.*, May 2, 1903.

ECZEMA.

Norman Walker, M.D.

In an article on the “Histogenesis of Scales and Crusts,” Sabouraud¹ rejects the ordinary belief that scales are formed by exfoliated epithelium, and crusts by solidified serum. All scales, except those of ichthyosis, are, he states, really scale-crusts involving both effusion and desquamation. The leucocytic transmigration which he calls “exocytosis” is imperfectly understood, and extends through all the layers right to the surface, not being confined to the epidermis. It may be produced by

very slight irritation. The rationale of the production of these scale-crusts is as follows: Serum exudes under the horny layer (exoserosis), next day as the horny layer is shed it is on the surface, the day after a new horny layer is formed beneath this, so that there are two horny layers with blocks of solidified serum between, with the addition of leucocytes. The removal of these crusts, themselves irritants, by means which do not increase irritation and exudation, is evidently therefore an important part of the treatment.

Heath,² in a lengthy article on this disease, speaks of the difficulties of classification, especially as the same eruption may exhibit various types at the same or different times on various parts of the body; and finally separates them, not very satisfactorily, according to the periods of life.

In infancy the special proclivity is attributed to the skin being less horny and resistant than in the adult, and to the fact that there is greater probability of intestinal irritation from unsuitable diet. Intertrigo is often the starting point of an eczema which may at a later stage involve the whole body. In ill-nourished, cachectic, and strumous children this condition of intertrigo may go on to even more serious results, and he has seen several cases of gangrenous dermatitis in the groins and axillæ which apparently began as an ordinary intertrigo.

In infants eczema may be divided into general and local, and is much more liable to become pustular than in adults. The generalized type must be treated by careful **Diet** and administration of **Cod-liver Oil** if necessary; locally, scabs and crusts must be removed by soaking in fresh olive oil, followed by sedative lotions or ointments, while later, when the case becomes more chronic, weak **Tarry Ointments** are often very valuable.

The local type commonly noticed on face, nose, ears, or scalp, and often produced by discharges or presence of crusts, is best attacked by **Dusting Powders** in the catarrhal stages, sedative ointments in the subacute stages, and weak **Tarry** or **Mercurial Ointments**, glycerin jellies, or **Unna's Plaster Mulls**, in the more chronic stages.

Puberty eczemas, again, show a partiality for the face and neck, sometimes being thickened and infiltrated; they often occur in those debilitated, and disappear after the summer holiday. A weak ointment of **Oleate of Zinc**, applied at night and rubbed off in the morning with a dry cloth, is recommended, or otherwise a gelatinous paste or varnish, with **Oxide of Zinc** or **Calamine**.

Eczema of the flexures is common between twenty and thirty, and is treated best in this writer's experience by painting with **Silver Nitrate**, 10 grs. to the ounce of spirit etheris nitros.

In middle life is met the erythematous form, with œdema of the eyelids, which is best combated by **Zinc Calamine Lotions**. Acute generalized eczema may progress to exfoliative dermatitis. There is very often a history of a small patch, local for some years, which some disturbance of bodily health or external irritation has caused to spread. Alcoholic excess is mentioned as the cause of outbreak in a case of chronic eczema of the wrists which had persisted for seven years. **Rest** in bed and mild treatment are essentials, and different portions of the eruption require as a rule different methods. **Vinum Antimoniale** internally in 10-minim doses every two or three hours, as recommended by Morris, is considered useful, as also are **Saline Laxatives**, **Colchicum**, and in some cases tonics.

Eczema of the aged is frequently accompanied by papules like prurigo, and requires anti-pruritic lotions or ointments.

Heubel³ reports a case in support of the non-parasitic nature of eczema. It occurred in a baby of seven months, and all treatment was unavailing till the source of the milk supply was examined, and it was found that *the cow was being fed with an excess of salt*. After this was rectified the lesions gradually healed. Three months later a recurrence took place, and on investigation it was found that the milk supply had been changed, and again there was excess of salt in the cow's feeding; the same procedure was followed by cure of the eczema. Further, it is interesting to note that another child fed from the second cow also suffered from eczema, which disappeared when the excess of salt was removed. Unfortunately he does not state the precise quantity of salt proper for a cow.

Hartzell⁴ speaks highly of the value of **Resorcin** in many forms of eczema, more especially in the seborrhœic type; it is preferably used as an aqueous lotion in the strength of 8 to 10 grains to the ounce.

REFERENCES.—¹*Jour. Cut. Dis.* Feb. 1903; ²*Birm. Med. Rev.* Oct. 1902; ³*Med. Rec.* Aug. 30, 1902; ⁴*Therap. Gaz.* Jan. 1903.

EKIRI.

James Cantlie, M.B., F.R.C.S.

Sekehito¹ describes a peculiar acute epidemic disease of children in Japan, of a very fatal character, which commences with high fever, mucous stools, ending in convulsions and coma. A fatal issue usually results in twenty-four hours after seizure.

The author states that he has found a bacillus, which he has named the "Ekiri bacillus," and which he considers the agent.

REFERENCE.—¹*Cent. f. Barakt. Paras. u. Infekt.* No. 6, vol. xxxiv, 1903; *Jour. Trop. Med.* Nov. 2, 1903.

EMPHYEMA.

Wilfred J. Hadley, M.D., F.R.C.P., F.R.C.S..

Latent Empyema.—Pearson read a paper under this heading at the Medical Chirurgical Society. In it he emphasised the difficulties of diagnosis, from pneumonia, thickened pleura, chronic tuberculosis, and simple marasmus. Many cases were never suspected until revealed at the autopsy. In suspected cases, repeated examination by puncture was advocated by some observers, whilst others preferred to make a more thorough investigation by resecting a rib at once. Some cases were afebrile, but in the majority the temperature rose to 103° F., and there was always progressive wasting. Leucocytosis or albuminuria might help in the diagnosis, as also skiagraphy. Interlobular empyema was referred to as the most difficult to diagnose and treat. The cases were generally fatal, death occurring as the result of complications, such as, (1) Toxæmia, (2) Local damage to the lung and pleura, or extension to the neighbouring parts (pericarditis and peritonitis), or (3) Remote, from general infection, resulting in meningitis or some secondary abscess. The cases were not always pneumococcal in origin, some were streptococcal; and it was noticed that the pus was thin in the latter, whilst in the former it was too thick to pass through the ordinary fine needle used for exploring purposes. Though obscure, the cases were generally found to have had a definite, acute onset, which had often been regarded as pneumonia.

Fletcher Ingals, of Chicago, regards empyema as very fatal. According to him, the total death-rate after operation stands at 28 per cent (children under three years 50 per cent, from three to fifteen years 2 to 3 per cent). He recommends tapping and draining with a large tube, *without* resection of rib, as he says that 70 per cent recover by this means, whilst only 30 per cent recover when resection is added to drainage.

[It must be remembered that the fatality of empyema is greater the younger the patient, and that it is in the very young (small) patients that resection is more often necessary, in order to get free drainage, because of the small space between the ribs. This will explain the higher death-rate in cases where resection is resorted to.]

EMPYEMA, (Surgical Treatment). *Priestley Leech, M.D., F.R.C.S.*

Dr. Charles N. Dowd¹ in a report on 75 cases of empyema, chiefly in children, summarises the treatment as follows:—

(a,) For simple cases: Excision of about one inch and a half of the seventh or eighth rib in the posterior axillary line; light ether anæsthesia is usually employed. Any purulent coagula are removed; short rubber tubing cut partly across, doubled and held by large safety pins, is used for drainage; abundant gauze dressing is applied, and changed when saturated.

(b,) If the patient's condition contra-indicates general anæsthesia, an incision may be made into the chest between two ribs under cocaine anæsthesia.

(c,) Aspiration is used to give temporary relief only in patients who are in great distress from the pressure of the fluid, or to relieve temporarily the second side of a double empyema, after the first side has been opened.

(d,) The patients are allowed out of bed as soon as possible, and the expansion of the lung is encouraged by forced expiration.

(e,) Irrigation is only used where there is a foul smelling discharge from necrotic lung tissue.

(f,) Secondary operations are not done until good opportunity has been given for healing; usually three or four months should have elapsed after the primary operation, and there should have been no noticeable improvement for a month.

(g,) In the secondary operation the expansion of the lung should be encouraged by incising, stripping back, and if necessary removing portions of the thickened pulmonary pleura.

Pearson and Mummery² deal with the after-treatment of empyema in infants. The mortality is high among patients under two years of age; in infants a pneumococcal origin is more common than in adults, and re-expansion of the lung takes place more readily, but there is a greater liability to complications. For respiratory embarrassment, which comes on sometimes after operation accompanied by some cyanosis, use inhalations of oxygen; if the cyanosis should be due to broncho-pneumonia the oxygen may do good, but is not so useful. Be careful that no tight-fitting bandages or clothes impede the child's respiration, and if the weather be fine get the child out of doors as soon as possible, which may often be in a week or ten days in favourable cases. Dress frequently, with great care against sepsis, and turn the child on the affected side to allow any pus to flow out. Remove the tube each day and clean thoroughly. The tube

must be of soft rubber with a large calibre, and only sufficiently long to go through the chest wall, and get rid of the tube as early as possible ; much more harm is done by a too late removal than by a too early one. If the tube is removed too early and pus re-accumulates, it can easily be let out again ; but by keeping it in too long, it prevents re-expansion and may leave a very troublesome sinus, and the longer the tube is left in the more the risk of secondary infection. In some cases the tube may be left out in forty-eight hours. The position of the heart and cardiac impulse and sounds are of great importance for the determination of the presence of complications. As long as drainage is necessary, keep a wide opening ; if signs and symptoms of retained pus persist, although drainage is apparently free, search must be made for a second pocket of pus, and this may be done by passing a catheter into the wound and pushing it in various directions. If there is an empyema on the opposite side of the chest it is best to be content with simple aspiration of the pus for a day or two, until there has been time for re-expansion of the lung on the side first affected.

REFERENCES.—¹*Med. News*, Sept. 1902, *New York Med. Jour.* Sept. 27, 1902 ; ²*Pract. Aug.* 1903.

ENDOCARDITIS, (Malignant). *Prof. A. H. Carter, M.D., F.R.C.P.*

Dr. Ogle¹ contributes an interesting and careful paper on the use of **Anti-streptococcic Serum**, and gives a list of nineteen cases in which the serum was used, and in which an attempt was made to identify the organisms present. The evidence afforded by these cases would at first sight seem to be unfavourable to the serum treatment, but it should be remarked : (1) That several records with favourable issue are not included in the table, as, although very possibly examples of malignant endocarditis, the nature of the organism or the involvement of the valves remained uncertain ; (2) That in many of the cases the serum was really inapplicable on account of the infection being either a mixed one or due to other organisms than streptococci ; and (3) That in those associated with pure streptococci some of the failure may be attributed to the small dosage employed, to the irregularity of its administration, and to the late date at which it was begun, more especially if it be recognized that there is at first probably a general septicæmia, with subsequent infection of the valves.

It may be that malignant endocarditis, with streptococci present not only in the blood but, as a colony, in the vegetations bathed by the blood stream, is beyond the power of serum treat-

ment in most instances ; but some of the cases seem to prove that this is not inevitably so ; cases, moreover, certainly vary much in the rapidity of their course and in virulence. If any conclusions can be drawn from his tables they would, perhaps, be : (1) That the gravest symptoms, combined with streptococcic infection, even of the blood stream, are not incompatible with recovery if treated by injections of anti-streptococcic serum ; (2) That this is true also in malignant endocarditis, but that here the chances are probably less favourable on account of the colony of micrococci involved in the vegetations in constant contact with the blood stream ; (3) That in malignant endocarditis staphylococci are frequent, or a mixed infection of staphylococci and streptococci ; and (4) That if an examination of the blood be negative it would be prudent, therefore, to use injections of anti-staphylococcic together with anti-streptococcic serum.

REFERENCE.—¹*Lancet*, March 14, 1903.

ENTROPION. (See "Eyelids, Diseases of.")

ENURESIS.

G. F. Still, M.D.

Thiemich¹ points out that these patients are often the offspring of neuropathic parents ; in some cases the parents themselves have suffered from similar trouble. Some children who have been cured of enuresis, later on develop symptoms of hysteria, and the condition itself would seem to be hysterical in some cases, for it has occurred in epidemic form in institutions. Sheffield² considers that enuresis is due either to a spasmodic condition of the detrusor muscle, a condition found in nervous, irritable children, or to atony of the sphincter, which is found in those whose general health is feeble.

TREATMENT.—There can be little doubt, from the successes recorded with various mechanical methods of treatment, that suggestion plays a very large part, if indeed it be not the only virtue, in such procedures as that practised by Walko,³ who **Massages** the neck of the bladder by one finger in the rectum, or applies vibratory massage to the region of the bladder. He condemns the use of drugs of any sort, and regards the prolonged use of **Atropine** in particular, as dangerous. Similar in action no doubt, is the use of a **Sound** to distend the urethra, as described by Hopkins,⁴ and the applications to the neck of the bladder which have been described by others. Whether any such methods are either desirable or justifiable in the enuresis of children may perhaps be questioned ; certain it is that in

the majority of cases they involve much unnecessary distress to the child, for there are very few cases which will not respond to adequate treatment with drugs administered by the mouth. For this purpose Sheffield recommends a mixture:—

R Extract ergotæ fl. ʒiij | Extract rhus tox. fl. ʒj
Five to ten drops every four or six hours to a child six years old.

Or :—

R Extract hyoscyami ʒss | Aq. anisi ʒj
Sodium bromide ʒj | Syrup ad ʒij
One teaspoonful every four or six hours for a child of the same age.

Hopkins recommends tincture of **Lycopodium**, 15 to 30 minims, four times daily, with or without belladonna.

REFERENCES.—¹*Berlin. klin. Woch. in Med. Press*, Oct. 2, 1901; ²*Postgrad. in Therap. Gaz.* Dec. 1902; ³*Zeits. f. Diät. u. physik. Therap. in Brit. Med. Jour.* Jan. 10, 1903; ⁴*New York Med. Jour. in Arch. Ped.* Feb. 1903.

EPIGLOTTIS, Removal of. (See "Larynx")

EPILEPSY.

Purves Stewart, M.A., M.D.

A most thoughtful and suggestive paper on the pathology and treatment of epilepsy is that by W. H. Thomson,¹ who maintains that the essential pathognomonic element of epilepsy is not convulsions, nor even unconsciousness (since both of these may be absent), but the suddenness of the attacks. Many other diseases are rapid in their onset, but none are *instantaneous*, as epilepsy is. He recalls the fact that the beginning of every nervous action is always on the afferent side, and this dictum applies also to epilepsy, the motor explosion being lit by some afferent train, just as in strychnine poisoning, where the convulsions are excited by some outside stimulus. Such a view would transfer the primary seat of the disease from the motor or efferent, to the sensory or afferent side. The clinical difficulty, however, is to discover the precise afferent source in each case. Irritation which is intra-cranial is as much afferent as that occurring in the intestine or anywhere else, and in treatment we should, first of all, make a *thorough search for some abnormal afferent irritation*, intra-cranial or elsewhere. For example, a not uncommon cause of epilepsy is venous thrombosis in the meninges, following one of the specific fevers; head injuries, sunstroke, etc., are also occasional antecedents. For this class of case, where the patient often has uncomfortable sensations in the head during the barometric changes presaging a storm,

he recommends long-continued treatment with **Biniodide of Mercury** (gr. $\frac{1}{5}$ t.i.d.) and the application of **Biniodide Ointment** to the nape of the neck and to the mastoid processes. Nasal irritation is present in some cases of epilepsy, just as in asthma, and in them vertigo and abnormal sensitiveness to sounds sometimes occur. The greatest area of reflex excitability in the body, however, he considers to be the region of the epiglottis, where the tracts for respiration and deglutition cross, and he attributes many cases of epilepsy to hurried eating and drinking. In such cases, if there be hyper-excitability of the pharynx, he recommends that it should be painted once a week with a solution of **Silver Nitrate** (10 grs. to the oz.). Gastro-intestinal irritation should be looked for and corrected by appropriate remedies.

In addition, Thomson claims that the transmission of an abnormal afferent impression can sometimes be prevented by an *artificially-induced counter-impression*. On this principle he frequently employs a **Red Pepper Pack** in epilepsy (a half to one drachm of capsicum to each pint of boiling water) applied to the whole body until the skin is reddened.

The beneficial effect of **Bromides** is the result of their action upon the afferent sensory apparatus. The administration of bromides, however, inasmuch as it requires to be long-continued, demands great care, to avoid bromism; this is best achieved by attention to the general health, and by the administration of **Phosphorus** and **Cod-liver Oil**. The specific action of the bromides may also be reinforced by combination with one of the **Coal-tar Products**, as for example one grain of **Antipyrine** with every two grains of bromide. **Chloral** is another excellent adjuvant, but should not be given in doses larger than 10 grains.

The **PROPHYLAXIS** of epilepsy is as important as its cure. It should be borne in mind that the epileptic has a profoundly perverted constitution, and nothing which can improve his general health should be held too trivial to receive attention. Toxæmia, especially from the gastro-intestinal tract, is one of the commonest causes of ill-health. Hence the prime importance of **Diet**. It must be insisted that the epileptic eat very sparingly of meat, and intestinal antiseptics are to be prescribed, particularly if a bad breath accompanies or follows the attacks, or in cases with a batch of seizures in close succession after a long interval of immunity. Another cause of toxæmia is inefficient renal elimination, which may be present without either albumin or casts being found in the urine. Finally, he

recommends an **Open-air Life** as a most important factor in the diminution of nervous excitability, possibly because under such conditions the tendency to toxæmia from auto-infection is greatly reduced.

This paper gave rise to an interesting discussion², chiefly with regard to the pathology of the disease, in which Sachs pointed out that all persons are alike exposed to these same afferent stimuli, and yet all persons do not become epileptics. The afferent stimuli therefore are responsible merely for the attacks, and there must be an underlying abnormal irritability of the cortical centres. Spratling totally disagreed with the statement as to the suddenness of the phenomena of epilepsy, since in many cases the approach of an attack can be foretold for some time previous to its occurrence. The afferent impulse theory seemed to him unnecessary; epilepsy is rather to be regarded as due to some defect in the brain-cells.

In opening a discussion at the Medical Society of London on the treatment of epilepsy, Risien Russell³ first discussed various theories as to the etiology of the disease. The brains of epileptics show degenerative changes, but there is as yet no unanimity of opinion as to how far these morbid changes are responsible for the clinical manifestations of epilepsy, and how far they are merely evidences of the destructive effects of the storm. Of the theories advanced to explain the occurrence of epilepsy, that which supposes the disease to result from an auto-intoxication has received most acceptance, though it cannot be said to have been proved. We are still in ignorance of the essential cause. Hence no really rational treatment has yet been introduced. Nevertheless, on the theory that epilepsy was due to some poison gaining access to the nerve elements by the blood-stream, the **Serum** from a severe epileptic has been introduced into a milder epileptic, or re-introduced into the patient himself on a subsequent occasion. The knowledge that acute specific fevers often exert a favourable influence on epilepsy, has induced other observers to try the effects of the inoculation of filtered cultures of **Streptococci**, **Staphylococci**, **Erysipelas Toxin** or **Antitoxin**, etc., but none of these measures have yet justified us in discarding the **Bromide** treatment, which is still the most potent remedy available for idiopathic epilepsy. Bromides, to do good, must be given boldly. Many of the ill effects attributed to bromides are really due to the epilepsy, and might be averted if the drug were given more freely in the early stages. Russell considers

that there is no advantage in giving the mixed potassium, sodium, and ammonium bromides. He prefers to prescribe the potassium salt, and if it causes undue depression, he substitutes the sodium or ammonium salt. Bournville has so persistently advocated the use of **Bromide of Camphor**, and such excellent results have been published from the Bicêtre, that this preparation seems worthy of a trial. But whichever of the bromide salts be used, a single dose should be given an hour before bedtime in nocturnal epilepsy, and two hours before an expected day attack. It is sometimes necessary to give the drug twice or even three times a day, but as a rule it is better to increase the single dose than to give the same amount in divided doses. Of medicinal adjuncts or substitutes for bromide, **Borax**, **Belladonna**, **Digitalis**, and **Arsenic** have best justified their use.

Flechsig's method of employing **Opium** in large doses for several weeks, and then giving large doses of bromide, is not devoid of risk, and though Flechsig's own results are encouraging, other observers have been less fortunate. Though **Morphine Hypodermically** is an efficacious means of arresting the status epilepticus, Russell prefers under such circumstances to rely upon hypodermic administration of **Hyoscine** or large doses of **Chloral** by the rectum. Of the newer preparations, such as bromipin, bromalin, bromocol, etc., **Bromipin** has been most employed, and with favourable results.

As to diet in epilepsy, he agrees with the unanimous opinion as to the importance of *prohibiting stimulants, including tea and coffee*. It is also agreed by the majority of observers that epileptic patients do best on a diet which contains *only a small amount of meat*. The *exclusion of salt* from the diet has also the effect of rendering smaller doses of bromide efficient (*see "Dietetic Treatment,"* below).

Sir Victor Horsley, who opened the discussion from the surgeon's point of view, admitted that surgery can do nothing for generalised idiopathic epilepsy. The cases where surgical interference might prove beneficial are chiefly the localised traumatic cases, where there is a wound healing by granulation, and in which removal of the scar and damaged nerve-tissue may sometimes produce recovery. Cases of congenital Jacksonian epilepsy, sometimes associated with hemi-spastic paralysis, are not infrequently due to cysts with porencephaly, and are favourable for operation. In cases of reflex convulsions due to injury of a peripheral nerve or of the spine (of which Horsley has had two

cases, one of which was cured by laminectomy), surgical removal of the focus of irritation is sometimes to be recommended.

Beever thought it difficult to trace epileptic fits to a toxic origin, and considered the more probable origin to be a congenital instability of the cortical cells, so that slight causes might induce fits to occur. Ormerod recommended **Borax** in cases where prolonged administration of bromides had apparently produced a tolerance, and in children he had found **Belladonna** specially valuable. In addition to drug treatment, he emphasised the importance of looking for apparent exciting causes, and removing them if possible, *e.g.*, worms, indigestion, anxiety, fright, mental overwork, etc. Dentition, puberty, and menstruation, however, which so often increase the fits, can be studied but cannot be prevented.

Fletcher Beach⁴ dissents from the view as to the toxic origin of epilepsy, and maintains the importance of a neurotic inheritance with some super-added peripheral exciting cause. The latter should be carefully looked for and removed if possible. He is in favour of limiting the amount of meat in the diet, but does not approve of the reduction of chlorides, chiefly because of the difficulty of maintaining the *régime* for a long period. He is in favour of large doses of **Bromides**, and prefers a combination of ammonium, sodium, and potassium bromide. It is best to give a single large dose at night, it is less likely to be forgotten by the patient. The treatment of epileptics in **Colonies** produces most gratifying results, especially in town-bred epileptics. The open air improves the general health and diminishes the fits, and the colonist is capable of being employed in profitable farming and gardening.

Audenino and Bonelli,⁵ having found that there is a deficient absorption and elimination of calcium in epileptics, have tried various calcium salts in the treatment of epilepsy, and state that **Calcium Bromide** is more efficacious than the corresponding sodium or potassium salt. They believe that the efficacy of Richet and Toulouse's milk-diet lies in the quantities of calcium so introduced.

TREATMENT.—Surgical.—The results of various operative measures for the treatment of epilepsy may here be conveniently referred to. Even those surgeons who recommend operative interference admit with Park,⁶ Horsley, and Jonnesco,⁷ that careful selection of cases is necessary. Operation is not to be recommended indiscriminately. The best results are got in

cases due to local foci of irritation, intra-cranial or elsewhere ; cases of general idiopathic epilepsy are less suitable. Of the operations which have been recommended for idiopathic epilepsy, the best known are **Ligature of the Vertebral Artery**, resection of the **Cervical Sympathetics**, and **Craniotomy**. This last may be regarded as discredited. The *rationale* of the first operation is based upon rendering the brain more anæmic by ligature of the vertebral artery, which anæmia, however, at best can be but transient. Or we may render the brain hyperæmic by excision of the cervical sympathetic. This procedure should be reserved for cases characterised by blanching of the face at the onset of the fit, or where the fits are alleviated or warded off by nitrite of amyl, which produces a temporary cerebral hyperæmia. (*See also* "Brain, Surgery of.")

In one case, whilst Doyen was trephining the skull, the patient had a fit during the operation, and it was observed that at the onset of the convulsions the brain became suddenly anæmic. This then is the class of case for which resection of the cervical sympathetic would be best adapted.

Psychical Treatment.—Campbell Thomson⁸ records several cases in which he has endeavoured to ward off epileptic fits by instructing the patient, as soon as he feels the onset of the aura, to make a definite **Mental Effort**. Thomson recalls the well-known fact that certain epileptics can occasionally arrest or ward off a fit by "natural" methods ; for example, by an effort of will, or by a device such as tying a cord round a limb and pulling it tight. Fits have also been known to be arrested by the stimulation of other sensory nerves, as by smelling ammonia or sucking some pungent substance ; and sometimes by an effort of will the patient "pulls himself together" and prevents himself from "going off." Moreover, patients, except in severe and confirmed cases, seldom have a fit when their attention is closely occupied by some mental effort, (though there are exceptions to this rule). On the other hand, mental worry increases the liability to fits, whilst a serene mind tends to diminish their number. The supposed curative effect on epilepsy of operations *per se*, may really be due, as White⁹ points out, partly to psychical influence, especially in cases where no abnormality of importance was found at the time of operation. Treatment by **Hypnotic Suggestion** has also been attempted by Boris Sidis¹⁰ and his colleagues. Thomson has elaborated to some

extent this method of Boris Sidis, which consists essentially in instructing the patient to make **Voluntary Efforts of Memory** during that period of the fit which precedes complete loss of consciousness. He should be instructed to remember every possible detail of surrounding objects and incidents at the commencement of each fit, and after the fit is over, to carefully write out all the phenomena observed. With practice, the power of memory increases, and extends further and further into the fit, and the process seems to be distinctly beneficial. The patient should also be encouraged to struggle against yielding to the fit. This method of strengthening the inhibition is not to be recommended as a substitute for other treatment, *e.g.*, by bromides, but as a useful adjuvant.

Dietetic Treatment.—A considerable number of cases have now been published recording the results of a **NaCl-free diet**, combined with the administration of **Bromides**, according to the plan originally introduced in France by Toulouse and Richet,¹¹ in 1900. Toulouse treated a series of 20 patients with an ordinary mixed diet minus salt, giving them at the same time from 30 to 60 grains of sodium bromide *per diem*. The number of fits at once diminished. In 13 cases out of 20 the fits, previously occurring daily, ceased in a fortnight, and subsequently recurred at much longer intervals than before. On returning to an ordinary diet containing NaCl, the fits recurred with their old intensity. According to Toulouse, the most severe cases of epilepsy are the ones best adapted for this treatment. The withdrawal of sodium chloride is supposed to render the organism more susceptible to sodium bromide, so that a smaller dose of the latter is efficient in preventing the fits.

Various modifications of this diet, all based on the withdrawal of NaCl, have been recommended by other observers, and the general consensus of opinion is that this method of treatment is of considerable value. Thus Zickelbach¹² treated 17 cases of epilepsy with good results by bread salted with NaBr, together with a diet chiefly of milk and vegetables, and without salt. Balint,¹³ on similar lines, gave in 10 cases a diet consisting of milk, butter, fruit, eggs and bread salted with NaBr. When a distaste for this *régime* developed, he gradually added vegetables, minced meat and ordinary butcher-meat, but these were cooked with NaBr instead of NaCl. The result was that the fits on the average were diminished to 22 per cent of their former frequency. Pandey,¹⁴ while admitting that bromides are undoubtedly more

efficacious if NaCl be withdrawn from the diet, considers the method not devoid of the risk of toxic symptoms, due to the bromides, and states that the diet can only be tolerated by patients for a short time. Two of Pandey's assistants, Halmi and Bagarus,¹⁵ go so far as to say that the method neither cures nor improves epilepsy.

Personally the writer has tried this diet in a number of cases, and is of opinion that the results are distinctly encouraging.

Serum-therapy.—Ceni's essay on **Serum-therapy** in epilepsy,¹⁶ which gained the Craig Colony prize, describes a new line of treatment which merits careful trial. Ceni performed experiments consisting of the intra-albuminous injection into hen's eggs of the serum of epileptic patients, a "control" series of eggs being treated with the serum from normal individuals. He found that the epileptic serum had a markedly greater teratogenic power, and this fact, he concludes, supports the auto-toxic theory of epilepsy. He then proceeded to investigate the effect of injections of progressive doses of epileptic serum in epilepsy itself, thereby increasing the amount of poison in the system with the object of rendering the patient immune to larger doses of the poison. In some cases the serum obtained from one patient was injected into another, in others the patients received injections of their own serum abstracted a few days previously. The dose was progressively increased from 3 to 5 c.c. daily, up to 10 to 20 c.c. daily, in 30 or 40 days. In eight out of ten cases recorded, striking results were obtained. The number of attacks diminished and in two cases disappeared completely, as seen from the following table. The first column indicates the average number of attacks of all sorts, major or minor, per month, for the two months preceding the injections. The second column records the average number of attacks per month during the six months following the injections. The first month of the treatment is not included in either column.

		AVERAGE BEFORE INJECTION.		AVERAGE AFTER INJECTION.
Case	1	103	...	5'4
"	2	60'5	...	2'9
"	3	42'5	...	7
"	4	23	...	4'3
"	5	31	...	4'3
"	6	60	...	0
"	8	128	...	0 (3 months)
"	10	163	...	13'2

Moreover, the patients manifested a marked bodily and mental improvement. In the eight successful cases there was an average increase of 8.2 kilogrammes in weight, and the patients became brighter and more intelligent. The improvement was maintained after the injections were stopped, though not quite at the same level in all cases. The remaining two cases showed no improvement, rather the reverse.

These remarkable results deserve careful consideration. Whether the improvement was entirely due to the injections, as Ceni thinks, or whether as Russell, of Birmingham, suggests,¹⁷ the suspension or diminution of the previous heroic doses of bromide may have produced part of the improvement, (the patients suffering from epilepsy *plus* bromism), cannot yet be asserted definitely, but this question would be solved by the suspension of bromide treatment for a considerable period before commencing the serum injections, or by its uninterrupted continuance throughout the course of the experiment. Ceni himself attributes the results to a general stimulation of metabolism.

Epilepsy and Eye-strain.—Amongst the peripheral sources of irritation which may play a part in the production of epilepsy, G. M. Gould has specially emphasized the frequency of morbid optical conditions in epileptics.^{18, 19} So long ago as 1893 Work Dodd²⁰ examined 100 consecutive cases of epilepsy, and found that by correcting errors of refraction, in combination with other treatment, 49 were cured or relieved.

Epilepsy and Crime.—Spratling²¹ has again directed attention to the "silent forms" of epilepsy, in which, instead of the ordinary *grand mal* with its classic and dramatic phenomena, the patient either shows a "psychomotor epileptic equivalent" whose one characteristic is psychomotor violence, or he has a "psychical attack pure and simple." The latter variety may go unrecognised for years, unless witnessed by a skilled observer. Such patients have attacks in which they feel that something is wrong; they are apprehensive, restless, nervous, impulsive, unable to think or act in a well balanced and connected way, and above all, they have a bad memory. It is difficult for them to grasp things pointedly and clearly, and at times, when the seizure is present, although they may seem in a normal state, their perceptive senses are clouded over and dead to new impressions. People who forget in a striking and unusual way, who disappear for long periods of time, and who find themselves with returning consciousness in a distant place, have epilepsy of

this psychical type. They have done nothing violent, there has simply been a lapse in the conscious operations of the mind, whilst the body has continued to act in a normal though purely automatic manner.

Such cases of "silent" epilepsy are not uncommon. Their importance is great, both medically and medico-legally, and their relation to crime should always be borne in mind. The insane epileptic of asylums has little facility for crime, partly because he is vigilantly supervised, partly because he is less potent for evil owing to his being more or less demented. Yet many epileptics, 20 per cent at least, do not become insane, and an epileptic who is sane at other times, may, while in the peculiar mental condition following upon a fit, commit the most open and extraordinary crimes, being in a state of mental automatism, with loss of his sense of personal identity, so that he acts like a mere machine. He is able to go about as usual, eat his meals, and perform sundry commonplace actions, but all the time he is ignorant of what he is about, his mind is blank, and he may, in such a state, perform a criminal act without either premeditation or criminal intent. If an epileptic is in this state, without sense of locality or personal identity, it is not safe to oppose him, as he is apt to become combative and dangerous.

REFERENCES.—¹*New York Med. Jour.*, Nov. 8 and 15, 1902; ²*Med. Rec.*, Nov. 15, 1902; ³*Brit. Med. Jour.*, Feb. 14, 1903; ⁴*Lancet*, Feb. 23, 1903; ⁵*Rif. Med.*, Sept. 5, 1902; ⁶*Amer. Med.*, Nov. 22, 1902; ⁷*Therap. Gaz.*, Sept., 1902; ⁸*Lancet*, April 18, 1903; ⁹*Phil. Med. Jour.*, June 15, 1901; ¹⁰*Psycho-pathological Researches in Mental Dissociation*; ¹¹*Rev. de Psych.*, No. 1, 1900; ¹²*Ungar. Med. Presse*, Feb. 16, 1903; ¹³*Neurol. Centralb.*, p. 347, 1903; ¹⁴*Psych. Neurol. Woch.*, No. 37, 1902; ¹⁵*Ibid.*, No. 48, 1903; ¹⁶*Med. News*, March 8 and 15, 1902; ¹⁷*Birm. Med. Rev.*, Sept., 1902; ¹⁸*Amer. Med.*, Sept. 13, 1902; ¹⁹*Ibid.*, July 5, 1902; ²⁰*Brain*, vol. 16, 1893; ²¹*New York Med. Jour.*, Oct. 11, 1902.

EPISTAXIS.

H. Lambert Lack, M.D., F.R.C.S.

Hunter Mackenzie¹ describes what he believes to be a new treatment for intractable nasal hæmorrhage. The bleeding came from the usual seat, namely, the anterior third of the septum, about 1 cm. above the nasal floor. Applications of adrenalin chloride and of the galvano-cautery were ineffectual, although twice repeated. The patient continued to bleed so freely that Mackenzie under general anæsthesia stripped off the whole thickness of the mucous membrane of the septum with a curette. This was followed by profuse hæmorrhage, which ceased spontaneously. There was a little recurrence on the following three

days, but no further hæmorrhage during the next five months, and the patient recovered his good health. Isatchick² recommends packing the nose with **Tampons of Wool** soaked in **Turpentine** in cases of obstinate epistaxis. He succeeded in one case where other remedies had failed.

REFERENCES.—¹*Lancet*, May 10, 1902; ²*New York Med. Jour.* May 3, 1902.

ERYSIPELAS.

Norman Walker, M.D.

Krukenberg,¹ from results obtained in 18 cases treated by **Red Light**, concludes that this treatment shortens the duration of the disease. All the patients were kept in red-painted rooms, whose only source of illumination was red light, and no local or internal medication was employed. The febrile stage subsided after an average of two days; during the first twenty-four hours the sharp line of demarcation disappeared; there were no vesicles or bullæ in most, and in only two were there severe general disturbances. He suggests that exclusion of the chemical rays is all that is required, and instances a case treated successfully in a darkened room. Further, he maintains that the action of many of the local remedies is simply to keep out light.

Tregubow² reports on a domestic remedy largely and effectually used in Bulgaria; it consists in exposing the inflamed area to the influence of a flame until a **Burn** of the first degree is produced. A piece of wool steeped in methylated spirit is set alight and held about $\frac{1}{4}$ inch from the skin; as soon as the patient complains of pain the flame is removed to another part. This is repeated twice or thrice daily, and in most cases a cure is effected in two days or less.

Rosenthal,³ having tried **Antistreptococcic Serum** in six cases, found no beneficial result in any, while Rijo,⁴ trying it on an infant of three months, reports rapid recovery. He gave it on the twentieth day when the disease was generalised; **Guaiacol Liniment** was used in addition.

REFERENCES.—¹*Münch. Med. Woch.* April 1, 1902; ²*Deut. Med. Woch.* July 3, 1902; ³*Ann. Gyn. and Pediat.* June, 1902; ⁴*Cronica Med. Quir. de la Habana*, Year 28, No. 20.

ERYTHEMA.

Norman Walker, M.D.

It has been well said that this condition is characterized by infinite variety, and increase of experience leads us to realise this more and more. Further, it seems a mistake to be too definite in regard to nomenclature: since frequently, indeed generally, there is a combination of types.

Erythema Nodosum.—Syers¹ controverts the assertion that this is related to rheumatism. In a large number of cases he failed to find any joint pains or heart affection; rather he considers that it is closely allied to urticaria. He quotes the case of a woman who had simultaneously characteristic appearances over the legs and arms, and urticarial wheals on the neck, and in whom dermographism was well marked. In treating these cases he regards salicylates as useless, and considers attention to **Diet, Rest** in bed, and the application of **Lead** and **Opium** as the only rational treatment. [Most other observers, however, have witnessed the relationship to the rheumatic diathesis and the value of **Salicylates** in this affection.]

Erythema Marginatum Perstans.—Finny² gives a full account of a variety of erythema multiforme, which he styles as above from the persistence of the lesions. The condition occurred in a lad of twenty-one years, who was a total abstainer, had a good history, and in whom no organic trouble was discoverable; the only abnormality of function apart from the skin lesions being indigestion and constipation. The eruption, which had lasted three years, consisted of small, raised spots, $\frac{1}{4}$ inch in diameter, fading on pressure, and of coloured annular patches or gyrate lines. They involved all parts of the body except the palms, soles, face, scalp, and upper part of the neck; there were enlarged glands in both groins, right axilla, and right mammary gland. **Thyroid Extract** in 5-grain doses was given with slight benefit, but discontinued for general **Tonic Treatment**.

Chronic Purpuric Erythema.—Osler³ describes its occurrence in a stone-mason who had suffered from varicose veins and ulcers of the legs. The disease consisted of extensive, deep brownish pigmentation with widespread areas of hæmorrhagic infiltration, general scaliness, and a hard, brawny condition of the skin of the legs, arms, and parts of the trunk. The liver and spleen were enlarged, as were also the glands in the groin. No organisms were found in the blood, and no history of syphilis was obtained. He believes that the enlargement of the liver and spleen were secondary to the cutaneous hæmorrhages.

Erythema Scarlatiniforme Desquamativum.—Millard⁴ had under his care a man of thirty-six, who had previously suffered from several similar attacks. Diffuse erythema involving the whole body, accompanied by slight pyrexia, general *malaise*, and furring of tongue, led to suspicions of scarlet fever, but the early

desquamation, absence of throat symptoms, and slight pyrexia distinguished it. No treatment is satisfactory.

Angioneurotic Erythema.—An interesting account is given by Bloodgood⁵ of this rare disease in a girl of seventeen, who had been operated on for supposed disease of the antrum, but where no pus was found. The erythema lasted for eighteen months with little variation, and was accompanied by great pain over the affected region. Division of the infra-orbital nerve caused its disappearance, but ten days later the same condition became evident on the opposite cheek, yielding, however, to similar methods. Two other cases are mentioned.

Hard Œdema of the back of the Hand.—Patey⁶ describes 48 cases of this condition in an unduly long article. All occurred in Italians; all were insured, and all came from the same locality. His contention that it is a traumatism produced by malingerers who are anxious for rest is fully established. The left hand was affected in three-quarters of the cases, and incision revealed a hæmatoma.

Acute Circumscribed Œdema.—This is distinct from the above is not caused by trauma, although it chiefly affects the joints of the extremities. Mendel⁷ narrates nine cases in four generations of one family, six proving fatal. It is related to urticaria, and has long been regarded as an angioneurosis, but he is inclined to regard it as an auto-intoxication of gastro-intestinal origin, and recommends **Laxatives** and **Salicylates**. Death may occur by involvement of the larynx and trachea.

REFERENCES.—¹*Lancet*, July 19, 1902; ²*Med. Press*, Jan. 21, 1903; ³*Amer. Jour. of Cut. Dis.* July, 1903; ⁴*Lancet*, April 13, 1901; ⁵*Johns Hopkins Hosp. Bull.* May, 1903; ⁶*Rev. Med.* May 20, 1903; ⁷*Berlin klin. Woch.* vol. xxxix, 1902.

EXTRA-UTERINE GESTATION.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

ETIOLOGY.—Many explanations as to the causation of tubal pregnancy have been given from time to time; they are reviewed at some length by Brooks Wells.¹ The main contention has surrounded the question whether diseased or healthy tubes are the more likely to become the seat of pregnancy; and the question is far from settled.

DIAGNOSIS.—In the Bradshaw Lecture for 1902 Cullingworth² draws a graphic picture of the clinical aspect of a patient with diffuse intraperitoneal hæmorrhage resulting from tubal preg-

nancy. He gives the following as the points on which he would principally rely in diagnosing this condition :—

(1,) The fact that at the moment of the attack the patient was in her usual health. This circumstance would render it highly improbable that the symptoms were due to gastric or intestinal perforation, or to rupture of an internal abscess or suppurating cyst.

(2,) The gradually increasing pallor of the patient, and the gradually rising pulse-rate (without corresponding rise of temperature), both being indicative of internal hæmorrhage.

(3,) The extreme tenderness of the abdomen. To this symptom he has learned to attach a very special value. It often misleads the medical attendant into supposing that there is acute general peritonitis. Peritonitis is a not infrequent later result ; but this marked tenderness may be observed when, on opening the abdomen, there is no visible sign of inflammation.

(4,) If a menstrual period has been missed or is overdue the diagnosis of the case is greatly facilitated ; but it does not follow that because menstruation has been regular rupture of an ectopic gestation may be excluded, for some of the most appallingly sudden cases of rupture occur at a very early stage of the pregnancy, before a single period has been missed. If, in addition to the arrested or delayed menstruation, there is morning sickness, the diagnosis is further facilitated.

He does not attach much importance to the usual signs of the presence of free fluid in the abdominal cavity, because, although useful when present, such evidence is not usually forthcoming.

In discussing the diagnosis of the encysted, limited form of hæmorrhage due to tubal rupture or abortion (*i.e.*, pelvic hæmatocele), Cullingworth says that it is ordinarily characterised by irregular uterine hæmorrhage, and by attacks of pain, more or less severe and often accompanied with vomiting, followed by the development of a distinctly circumscribed swelling, which may either be limited to the region of the uterine appendages on the affected side, or may more or less fully occupy the whole of the posterior part of the cavity of the pelvis, and encroach upon the lower part of the abdominal cavity. The irregular hæmorrhages and the pain are almost equally constant symptoms. With regard to the character of the discharge, it is for the most part dark in colour, moderate in amount, fairly thick in consistence, and, while it lasts, steady in its rate of flow. There are in some cases occasional gushes of bright red blood, but the general

characters of the discharge are as described. This uniformity in its physical characters gives to the discharge a considerable diagnostic value.

Cullingworth emphasises the point, on which we have previously laid stress in these pages, that there is no condition for which a disturbed ectopic gestation is more frequently mistaken than a threatened or incomplete *uterine abortion*. The physical characters of the blood discharged per vaginam often help to distinguish the one condition from the other. In contrast with the features above described as usually characterising the blood discharged in cases of pelvic hæmatocele, the discharge in uterine abortion is often very copious, fitful in its rate of flow, and variable in its colour and consistence. Gushes of bright red blood are apt to be more abundant and more frequent, and these alternate with the passage of clots. The appearance of the decidua in the vaginal discharges helps to confirm the diagnosis, though unfortunately it often escapes observation. It may be expelled either entire or in fragments. It differs from that expelled in membranous dysmenorrhœa only in being thicker, and in the fact of its expulsion being an isolated, not a periodical, phenomenon.

The pain is usually sudden in its onset, and at first very severe. It soon abates, however, and in a few hours may, for the time, pass off altogether. It not infrequently follows some strain. Its ordinary situation is one or other iliac region. It often recurs, the recurrence appearing to mark fresh internal hæmorrhages. Amongst the less constant symptoms may be enumerated the following, namely, faintness, which occurred in about one-third of Cullingworth's last thirty cases; nausea and vomiting, which occurred in about one-sixth; rise of temperature, which is recorded as having been present in about the same proportion; and retention of urine, which was met with in two cases. No symptom is more misleading than the vomiting, which is constantly accepted as proof that the mischief is in the appendix vermiformis, or at any rate that it is intestinal.

The only other symptom that calls for special mention is the occasional rise of temperature. This is too often regarded as an indication that the condition from which the patient is suffering is of an inflammatory nature; as a matter of fact it is a frequent accompaniment of a hæmatocele.

Legueu³ dwells on the differential diagnosis between ruptured extra-uterine gestation and *appendicitis*; the latter condition

is especially simulated by attenuation of the signs of internal hæmorrhage, localization of pain on the right side, and a high temperature. In extra-uterine gestation, however, there are, the author points out, certain definite signs by which the surgeon may be guided in the right direction ; such, for instance, as the absence of muscular contracture over the right iliac fossa, and the pallid face of the patient, strongly contrasting with the leaden aspect of the face of the appendicular subject. Moreover, attacks of syncope or a marked tendency to such attacks, almost always manifested in cases of tubal rupture, should lead to a suspicion of internal hæmorrhage.

Boldt⁴ calls attention to the difficulty that may be experienced in the differential diagnosis between *subacute pyosalpinx* and tubal pregnancy. He states that he has made such mistakes two or three times, and that others have erred likewise, because the symptoms of the former sometimes resemble those of the latter in every particular. This coincides with our own experience ; in three cases presenting the typical symptoms and signs of ruptured tubal gestation we have operated on this diagnosis and found a double pyosalpinx.

Late Ectopic Pregnancy.—Rieck⁵ reports a case in which Martin waited till the eighth month before performing laparotomy, and then removed a living child from among the intestines. He says that as a rule there is not much danger of the mother bleeding to death by the rupture of the tubal sac, and often a conservative method of treatment is the better. We believe that this doctrine is unsound, and that as a rule the practice of waiting is fraught with grave danger.

Neugebauer⁶ states that during the twenty years that he has operated in cases of diseases of women he has had to do with six cases of late extra-uterine pregnancy. In the most recent he operated at the end of the eighth month by abdominal section, removing a macerated fœtus and a macerated placenta, which did not bleed. The sac was treated like an abscess cavity, and recovery occurred. In three other cases Neugebauer successfully operated ; in the fifth where he diagnosed the condition another surgeon operated ; in the sixth, still under observation, the patient has gone about for a year and a half bearing a dead fœtus, but declines any operation as she feels quite well. This case is specially remarkable, as the periods had remained regular throughout, and, besides, there had never been pain throughout the history of the case. By late pregnancy he means gestation near (not at or after) term.

Operations for ectopic pregnancy undertaken after full term are reported by Ullmann,⁷ Oliver,⁸ and Smith and Williamson.⁹

REFERENCES.—¹*Med. Rec.* Nov. 22, 1902; ²*Brit. Med. Jour.* Nov. 8, 1902; ³*Bull. et Mem. de la Soc. de Chir. de Paris*, No. 31, 1902; ⁴*Med. Rec.* Jan. 10, 1903; ⁵*Münch. Med. Woch.* Aug. 5, 1902; ⁶*Monats. f. Geb. u. Gyn.* Nov. 1902; ⁷*Ibid.*, vol. xv, Supplement, 1902; ⁸*Lancet*, May 23, 1903; ⁹*Jour. of Obstet. and Gyn. of the Brit. Empire*, Jan. 1903.

EYE, Diseases and Injuries of. (See also "Cataract," "Cornea," "Conjunctiva," "Choroid," "Glaucoma," "Iritis," "Vision.")
A. Hugh Thompson, M.A., M.D.

Injuries of Eye.—Treacher Collins says that further experience has been gained in the use of **Haab's Large Magnet** for the extraction of particles of steel from the vitreous.¹ Haab himself gives statistics of 165 cases operated on by him at Zurich, in 71 of which—43 per cent—useful vision was preserved. The Moorfields statistics have been published by MacCallan,² and show very similar results, the magnet having been used in 38 cases, resulting in 14 eyes being preserved with useful vision. These results are considerably better than in the pre-Haabian days, when only the small magnet was used. It should, however, be stated that one factor in the improved results at Moorfields is the more exact localisation of the foreign bodies in the vitreous by means of the **X-rays** prior to operating. In the directions that Haab gives as to the mode of using his instrument, he emphasizes the danger of drawing the foreign body either into the ciliary body or into the substance of the iris. At first the patient should be placed so that the point of the magnet is opposite the middle of the cornea. As a rule a splinter slides round the lens and appears behind the iris, causing it to bulge forward at one place. The next part of the operation—the attraction of the particle through the pupil—may require much skill and patience. Finally, it is extracted from the anterior chamber through a corneal incision. This, it appears, is a much safer procedure than the older plan of making an incision through the sclera.

Enucleation of Eye.—In order to secure a stump with good movement after enucleation, the suturing together of the recti muscles has been recently recommended. Snell,³ after suturing each of the four muscles to the overlying conjunctiva and completing the excision, unites respectively the upper with the lower, the internal with the external muscles. The sutures employed are catgut or silkworm gut. Ernest Clarke⁴ has a

different method of suturing so as to allow for drainage, and recommends that the superior and inferior recti should be left alone.

The **Injection of Paraffin** into Tenon's capsule is recommended by Ramsay,⁵ who also sutures the two pairs of recti together, in addition to closing the mouth of Tenon's capsule with a strong silk pursed suture. He claims success in 30 out of 34 cases. The great disadvantage, whether paraffin or a glass globe is employed, is, of course, that it is so often extruded. Oatman,⁶ who has also employed paraffin for an artificial vitreous in Mules's operation, found in one case that though a fistula appeared, and half of the paraffin was lost, the fistulous opening then closed up spontaneously and the remainder of the paraffin was retained. One special disadvantage about paraffin is its liability to be absorbed (as has been found in connection with nasal plastic surgery), and to avoid this Oatman recommends that the paraffin employed should be one having a high melting point, and that it should be inserted in a solid though plastic condition.

Malignant disease of Eye.—Our knowledge on the subject of *metastatic carcinoma of the choroid* has been collected and summarised by Dr. Oatman.⁷ The following are the most important conclusions:—

The disease is extremely rare, only 30 undoubted cases in addition to the writer's own case having been published.

It is invariably a secondary growth, and in 20 out of 30 cases the primary growth was in the breast. This fact accounts for the preponderance of women over men among those affected. Even one of the male cases had carcinoma of the breast.

Both eyes were affected in one-third of the cases. This proportion is so large compared to the proportion of carcinomatous cases in which metastatic deposit occurs in the choroid at all, that it cannot be due merely to an accidental infection by the blood or lymph stream. The excessive rarity of the disease argues that there is some unknown factor which ordinarily protects the choroids from infection, but in the particular cases in which it does occur this unknown factor is in abeyance, leaving not only one but both choroids liable to infection.

The deposit always occurs posteriorly, near the point where a short ciliary artery enters the globe, and appears in the corresponding region of the second eye when the latter is affected.

Unlike sarcoma, it spreads laterally, because it is an infiltration of the choroidal lymph spaces with epithelial cells, which naturally

follow the path of least resistance. A typical ophthalmoscopic picture is "flat oval deposit or tumor on the temporal side of the nerve, involving the macula, with a central elevation of +3D, its edges gradually fading off into the surrounding fundus. Its colour is a dirty yellow with scattered pigment spots."

Tension is increased in one-third, normal or diminished in two-thirds of the cases. In sarcoma these proportions are reversed.

The average duration of life after the first eye-symptoms is 6½ months. Enucleation is not to be recommended except for the relief of pain.

A remarkable family history of *glioma* from Australia, is related by Mr. R. Earle Newton.⁸ Out of a family of 16 children two of whom died in early infancy, no less than ten were affected with glioma of the retina, seven in both eyes. In only two cases was an operation performed, and in both of these recurrence took place. All but one died before the age of three. In six cases the eyeball was ruptured by the growth. The only clue discovered to the causation was that one of the father's brothers was said to have died in infancy from some eye complaint.

Optic Atrophy.—In opening a discussion on the *rarer forms of optic atrophy*, Dr. James Taylor emphasized the frequency of its occurrence in general paralysis. He had made necropsies on several cases of general paralysis in which the mental symptoms had been present but a short time, although they had been blind in some instances for a considerable number of years. It was also a not uncommon result of the neuro-retinitis occurring in Bright's disease. With regard to the large class of cases associated with disseminated sclerosis, he believed they were in most cases the result of a retro-bulbar neuritis. These cases might show a central scotoma for colour, but never went on to complete blindness, though the pallor of the disc might be extreme. In this respect there was a marked contrast to what occurred in tabes. Tobacco amblyopia might in some cases go on to atrophy, especially if sugar were present in the urine. In one case of glycosuria he had known a central scotoma persist in a patient who had not smoked for twenty years. Mr. Holmes Spicer referred to a case of primary optic atrophy in a boy affected with diabetes insipidus, in which there was no question as to the use of tobacco. Many isolated cases, without any obvious cause, probably belong to the hereditary group (Leber's disease).

General Therapeutics.—Of the new drugs introduced of late years, a few have won for themselves an assured place.

Adrenalin, or extract of supra-renal capsule, is used in a 1-1000 solution. It has, says Shaw,⁹ two distinct uses; "one is to blanch the conjunctiva, and so lessen bleeding in operations involving the cutting of that membrane, such as tenotomy for strabismus or plastic operations on the lids; the other use is to reduce great conjunctival injection, and so promote absorption into the eye, which the injection greatly hinders. In this way cocaine or atropine may be got to take much greater effect on an acutely inflamed eye than it otherwise would." On the other hand, as a direct therapeutic measure, the influence of adrenalin is unimportant. Its effect is as transient as it is definite.

Protargol is most valuable in many inflammations of the conjunctiva, and in that of the lachrymal passages. Since it is not precipitated by albumin, it penetrates much more deeply than nitrate of silver, and being comparatively painless, can be used in much stronger solution. Darier¹⁰ recommends a 50 per cent solution (which is in fact a paste) for *trachoma*. With a 30 per cent solution and a moderate sized brush, a lather can be made and rubbed into the edges of the lids in blepharitis, a procedure which is not unpleasant to the patient, and if regularly performed is an excellent method of cure. For less severe forms of conjunctivitis, a 10 per cent solution is effective, and can be used for syringing in dacryo-cystitis. For ophthalmia neonatorum, though not so reliable as nitrate of silver during the height of the disease, it may afterwards be substituted for it with great advantage.

The effect of **Dionin** is to produce a very marked chemosis of the conjunctiva, a few minutes after being instilled in a 5 per cent solution. This action may be used to promote the rapid absorption of a sub-conjunctival ecchymosis, but its more important action is in cases of obstinate iritis or episcleritis, or other affections causing deep-seated pain. In many cases the result of even a single instillation of a 5 per cent solution is to cause relief which may last. In a few cases, however, it fails to produce any chemosis, and in these cases it can have no ulterior effect. In glaucoma it should not be employed, as it is said to have caused increase of tension in some cases.

Euphthalmin is useful as a mydriatic pure and simple. A 5 per cent solution produces a maximal dilatation of the pupil in 35 minutes without any appreciable effect on accommodation. The effect passes off in from two to four hours.

REFERENCES.—¹*Pract.*, Feb., 1903; ²*Roy. Lond. Ophth. Hosp. Rep.*, vol. xv, part 2, May, 1902; ³*Brit. Med. Jour.*, Nov. 1, 1902; ⁴*Ibid*; ⁵*Ophth. Rev.*, July, 1903; ⁶*Med. Rec.*, March, 1903; ⁷*Amer. Jour. of Med. Sci.*, March, 1903; ⁸*Aust. Med. Gaz.*, May, 1902; *Lancet*, Nov. 22, 1902; ⁹*Med. Press*, March 25, 1903; ¹⁰*Ocular Therap.*

EYELIDS, (Diseases of). *A. Hugh Thompson, M.A., M.D.*

The operative treatment of *organic entropion or trichiasis* is admittedly unsatisfactory, in that relapses are so common. The reason of this, says Dr. A. S. U. Anderson,¹ is the close attachment of the contracting palpebral conjunctiva to the inner surface of the tarsal cartilage. This causes the inner tarsal surface to become concave, and by using the free border of the tarsus as a fulcrum, draws the row of lashes from their normal position on the outer side of that free border to its inner side. The "Jaesche-Arlt" operation does nothing to prevent this, and the writer suggests a new operation, the principle of which is, after separating the palpebral conjunctiva from its close attachment to the tarsus on its inner side, to draw it outwards round the free border of the tarsus, and by means of sutures provide a new fixed point of attachment on its outer side.

The first stage of his operation is an incision on the outer surface of the lid along the lower border of the tarsus. The second is the separation "with spud or director or scalpel" of the under surface of the cartilage throughout its extent from the sub-conjunctival tissues. Finally, the lower border of the incision is to be drawn up and sutured to the outer surface of the tarsus, near its upper end, by three to five sutures, which are to be brought out through the upper border of the skin incision so as to close the wound. In some cases redundant skin may be removed, but this is not an essential part of the operation.

The advantage claimed is that the results of conjunctival shrinkage are shifted from the lid margin to the retro-tarsal folds.

REFERENCE.—¹*Therap. Gaz.*, April 15, 1903.

FACIAL NERVES, (Anastomosis of). *Wm. Thorburn, F.R.C.S.*

Kennedy,¹ in a paper which is not very readily accessible to practitioners, has, by a series of experiments and one clinical case, laid the basis of a method of treatment which may not improbably acquire in the future a considerable range of usefulness. More recently C. A. and H. A. Ballance and Purves Stewart² have elaborated and called attention to the clinical applications of this method.

In 1824 Flourens showed that in the wing of a cock the two

principal nerves could be divided and the upper end of the one sutured to the lower end of the other with perfect restoration of voluntary control. After this transference or "nerve-crossing," irritation of the superior nerve caused movements in the muscles supplied by the inferior, and *vice versa*, showing that transference was completely effected, but there was no confusion of voluntary movement, because the cerebral (or spinal) centres had accommodated themselves to the new conditions. Schwann, Bidder, Philipeaux and Vulpian, and others performed various operations with a view to crossing sensory and motor nerves, but obtained results which were sometimes doubtful from their point of view, which was to ascertain if motor and sensory nerves were interchangeable. Rawa made extensive experiments which seemed to show that nerves could be "crossed" without disturbance of voluntary control, and concluded that: (1) on union of a peripheral end of a motor nerve with the central end of another the function of those muscles which the former supplies becomes restored, and (2) the direction of the voluntary motor impulses which emanate from the centre can be altered at will, and that they will always accommodate themselves to their peripheral end organs. These conclusions were opposed by Schiff, Reichert, and Cunningham, but confirmed by Stefani in improved experiments, as well as by Howell, Huber, and Langley.

The question being thus doubtful, Kennedy, from whom we are quoting, undertook fresh experiments upon the crossing of nerves of voluntary motion, and he laid down certain criteria, viz., (1) The selected nerves must supply groups of muscles with opposing action; (2) The crossings must involve all the motor nerves of the limb, so as to prevent the possibility of a vicarious supply; (3) The entire supply of the flexors must be crossed with the entire supply of the extensors; (4) Precaution must be taken to prevent confluent union in a common cicatrix. Omitting an operation which was followed by sepsis, in three dogs he united the central segments of the musculo-cutaneous, median, and ulnar to the peripheral segment of the musculo-spiral and *vice versa*, the two points of union being separated by the anconeus. The animals acquired almost completely the power of making voluntary co-ordinated movements of the limbs: thus the leg was used perfectly in walking and running, in "giving the paw" and in holding a bone, etc. Recovery commenced about the thirtieth day after operation, and was complete from the forty-fifth to the ninetieth. Stimulation of the musculo-spiral above

the seat of crossing caused flexion instead of extension ; stimulation of the other nerves extension instead of flexion. Stimulation of the flexor centre of the cortex cerebri gave extension, and stimulation of the extensor centre, flexion. (Certain minor discrepancies are not here referred to). On these grounds Kennedy lays down the following important general conclusions :

“(1,) In the fore-limb of the dog, the nerve supply of the flexor muscles may be crossed with that of the extensor muscles, with the result that, despite the altered innervation, the animal regains, as before, the power of performing voluntary co-ordinated movements of the limb.

“(2,) The fact of crossing the nerves does not add materially to the time which would be required for recovery of function of the limb, if the same nerves were simply divided and reunited by suture as accurately as possible.

“(3,) The result of crossing the nerve supply of antagonistic groups of muscles is that the nerve centres which formerly innervated the one group now serve for the other group, and this alteration extends to the cerebral cortical centres, which become interchanged in position and retain their irritability.

“(4,) The cerebral cortical centres which have been made to interchange their positions by the crossing, are able, in response to the will, to emit impulses which can call forth in the new peripheral terminations movements in perfect co-ordination.”

The interchange of function is probably due to a re-education of the cortex cerebri by means of afferent impulses, including muscular sense.

In a paper upon suture of the brachial plexus, published in 1900, the present writer pointed out that the same conclusions probably apply to man, and in fact that he had probably unintentionally performed an operation of “nerve crossing,” without, of course, the precision of Kennedy’s experiments, which were then unpublished.

In 1898 Faure and Furet deliberately endeavoured to obtain restoration of function by nerve crossing in a case of facial paralysis, and attached the peripheral end of the facial nerve to the central end of the branch from the spinal accessory to the trapezius. No recovery had ensued after nine months, and Kennedy maintains that none was to be expected, as the facial had been divided eighteen months before the operation, and the muscles “were probably therefore degenerated beyond the possibility of recovery ” (but see Ballance’s cases *infra*).

Kennedy operated upon a woman, aged forty-six, with incurable facial spasm of ten years duration. "The right side of the face was incessantly twitching, the angle of the mouth being permanently drawn up, and the eyelids half closed. The condition had been under treatment at different periods, but without any success. Rather the condition got worse. On May 4, 1899, the facial nerve was divided close to its exit from the aqueduct of Fallopius, and grafted on to the trunk of the spinal accessory, just as the latter nerve emerges from under the posterior belly of the digastric muscle. The digastric, situated between the central end of the facial nerve and the junction with the spinal accessory, prevented any reunion of the nerve."

"Immediately after the operation, the right side of the face was in a condition of complete paralysis, and it remained in this condition for some time, the muscles losing their faradic irritability. In course of time gradual improvement showed itself, heralded first by recovery of faradic irritability in the muscles. The earliest indications of improvement were shown in the orbicularis palpebrarum, which began to recover faradic irritability and movement, thereby enabling the eye to be slightly closed, about the 18th day. By the 49th day the contractions and faradic stimulation were well marked, and the palpebral fissure could be voluntarily closed one half. By the 141st day the faradic irritability of the other muscles began to be recovered, and by the 155th day the faradic current gave, on applying the electrode over the junction between facial and spinal accessory, strong contractions in all the muscles of the face. Improvement gradually continued, and on August 17th, 1900, about fifteen months after the operation, the condition was as follows: She experienced no difficulty on account of the condition of the face. There was no return of the spasmodic condition. The conjunctiva of the right eye was quite normal; there was no increased lachrymal secretion, and she never was troubled with dust getting into the eye, as winking was perfectly efficient. She could shut the eye completely, although not so tightly as in the case of the sound eye. The orbicularis palpebrarum also contracted well to reflex stimuli. The right side of the brow could be wrinkled to a very slight degree only, and movements could be made in the cheek and mouth, although they could not well be co-ordinated. The labial letters could be perfectly pronounced, and the buccinator was efficient to prevent accumulation of food between cheek and gums while eating." The side

of the face was not atrophied, and in repose there was no appearance of paralysis, but muscular action was a little weaker than the normal. The trapezius and sterno-mastoid were normal. "A curious effect resulted when the arm was suddenly thrown up, for the face at the same time was thrown into contractions, owing to the impulses for the trapezius being directed to the face. If the arm was continued held up, these contractions of the face passed off."

In correspondence with Ballance, Kennedy states (*loc. cit.*) that improvement was still in progress four years after this operation. Briefly then, the action of the face is perfectly satisfactory except for the contractions on sudden throwing up of the shoulder.

The Ballances and Purves Stewart record seven cases in which the facial nerve has been crossed with the spinal accessory or hypoglossal for old-standing paralysis of the facial. "Having first assured ourselves by galvanic stimulation that muscle fibres still survived on the paralysed side of the face, the facial nerve was exposed at its point of exit from the stylo-mastoid foramen. The nerve trunk was cut across as high up as possible. The spinal accessory nerve was then exposed, its sheath incised at a level convenient for union with the divided facial, and into it the distal segment of the facial nerve was fixed by fine silk sutures. After healing of the wound, the muscles on the paralysed side were assiduously stimulated by daily galvanism for months, until faradic excitability reappeared, when faradism was substituted." As one of these cases dates back to 1895, Ballance was probably the first to make clinical use of nerve crossing. In six of the cases the anastomosis was facio-accessory, and in five of these voluntary movement reappeared, the nerve having previously been paralysed for periods varying from five months to three years; in the sixth case there had not to the date of publication been time for such recovery. In all there was at first paralysis of the sterno-mastoid and trapezius, which was, however, only temporary. If there were contractions before operation, these always gave place at once to a flaccid condition, which did not always disappear again, although in some muscle tonus was re-established. Unfortunately, in none of these cases was there restoration of *dissociated* voluntary movement, so that to produce facial movements it was always necessary to set the trapezius in action.

This latter fact rendered these operations of comparatively slight real benefit, and, as dissociation of movement entails

education of the cortex cerebri, so that (in these instances) the shoulder centre will have to do the work of that for the face, it appeared advisable to perform the crossing with a nerve derived from a centre nearer to the facial area. It was for this reason that the facio-hypoglossal method was finally selected, but the operation was performed only in one case, and that at a date too recent to judge of its results. On theoretical grounds the glosso-pharyngeal would perhaps (as suggested by Schaefer) be an even better point for attachment of the facial, but the operation would be difficult, and has apparently not yet been attempted.

On the whole, these results are disappointing, and, although they are full of pathological interest in connection with the question of regeneration of nerves, they do not imply any great gain to the patient. It is, however, now well established that in man, as in animals, nerve-crossing is followed by recovery of motor power, and that there is at least some attempt on the part of the cerebral cortex to educate itself to meet the new connections thus produced and hence to make use of them for dissociated voluntary movements, which shall be of practical service to the patient. So much being ascertained, it is permissible to hope that various paralytic and spastic conditions may hereafter be relieved by similar methods. (See also "Brachial Plexus.")

REFERENCES.—¹*Phil. Trans. Roy. Soc. London*, 1901, vol. 194, p. 127; ²*Brit. Med. Jour.* May 2, 1903, and letters in subsequent issues.

FÆCES, (Bile Pigments in).

Robt. Hutchison, M.D.

Supino¹ has an article on the value of testing the fæces for certain bile-pigments. The colour of normal fæces is not due to the presence of the unaltered colouring matter of bile. Bilirubin, as is well known, is transformed in the intestines into urobilin, and a part of it is reabsorbed to be used in the formation of bile and of the colouring matter of the urine. The presence of bilirubin in the intestine is, therefore, not a normal phenomenon, but is an evidence of some disturbance in digestion and absorption. Schmidt, in 1895, reported the fact that the presence of bilirubin and biliverdin could be determined in the fæces as follows: A small amount of fæces is triturated in an agate or glass mortar, and a concentrated solution of corrosive sublimate is added, mixing thoroughly, so that the reagent may penetrate every particle of fæces. The mixture is then allowed to stand covered in a porcelain capsule for twenty-four hours. A green or red colour is then observed, according to the pigment present,

bilirubin or biliverdin, or both colours if both pigments are contained in the specimen. This test is the simplest and most efficient method of determining the presence of bile pigments in the fæces. The present author studied the reaction in a series of normal stools, using a freshly-prepared saturated solution of corrosive sublimate. He found that the stools in all cases were coloured red, and when there was a great deal of putrefaction their colour became almost black. Apart from this, the most pronounced pathological processes in the intestines did not alter the colour obtained with Schmidt's test. He studied in this manner a number of cases, including three patients who were neurasthenics and suffered from habitual constipation, as well as five who had acute intestinal indigestion and gastro-enteritis. In the latter, the black colour spoken of was observed, but disappeared the moment the intestines had resumed their normal functions after having been cleared mechanically by an enema and a cathartic. This black colour may be of value in the diagnosis of intestinal lesions. In addition to the changes in colour above spoken of, he noted a whitish turbidity in the mixture of fæces and bichloride solution in all the cases except in those of simple gastro-enteritis and enterocolitis, in which it was but very slightly marked. This turbidity was found to vary directly with the amount of mucin present in the intestinal contents, and therefore the test is of value in determining the presence of a catarrhal process. The author concludes that while further study is needed to elucidate some points, Schmidt's test is destined to become a valuable and practical aid in the diagnosis of intestinal affections.

REFERENCE.—¹*Gaz. deg. Osped.* Feb. 15, 1903.

FALSETTO VOICE.

H. Lambert Lack, M.D., F.R.C.S.

Natier,¹ as the result of some careful experiments which he records by means of a graphic method, affirms that the falsetto voice is occasioned by respiratory troubles. These must be corrected, if we would gain the mastery over this disagreeable condition. Respiratory gymnastics appear to him to constitute the most efficacious and most rapid plan of treatment.

REFERENCE.—¹*Laryngoscope*, Feb. 1903.

FEMORAL VEIN, (Ligature of). *Priestley Leech, M.D., F.R.C.S.*

The consequences of ligature of the femoral vein below Poupart's ligament are by no means constant; in some cases little disturbance of the circulation of the corresponding limb

occurs, in other cases gangrene may ensue. Halberstadter¹ comes to the following conclusions :—

(1,) Ligature of the femoral vein below Poupart's ligament does not always produce the same results on the circulation of the corresponding extremity. It is frequently followed by severe disturbances of the circulation, which may lead to gangrene of the limb from a combination of circumstances which cannot be prevented.

(2,) In wounds of the femoral vein the hæmorrhage should be stopped by such means that the patency of the lumen is retained ; suture of the opening if possible is the best.

(3,) In excision of tumours which are adherent to the vein, as little as possible of the vein should be removed, and as many as possible of neighbouring branches should be saved.

(4,) Under all circumstances must the femoral artery be kept intact.

(5,) By careful hæmostasis a considerable blood infiltration of the connective tissue is to be avoided.

(6,) In cases where the artery is intact and the blood pressure is good, the limb must be raised after operation ; this should not be done where the artery is ligatured at the same time as the vein, and where the general blood pressure is low.

REFERENCE.—*Beitr. z. Chir.* xxxviii, Bd. Hft. 2.

FIBRO-MYOMA OF UTERUS.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Dangers and complications of Fibroids.—It has long been a tradition in gynæcology that fibroids of the uterus are benign tumours, which interfere only rarely with either the health or the life of the patient. A few enlightened and experienced surgeons have persistently endeavoured for a quarter of a century to refute this fallacy ; and their teaching is now being reinforced on all sides.

Recently a valuable discussion on the subject took place before the New York Academy of Medicine, which we regret that we have not space to record in fuller detail, but it may be summed up in the words of Blant-Sutton¹ as follows :—“ Surely there is nothing in the whole range of surgery more ironical than a woman spending twenty or even thirty years of her life as a chronic invalid on account of a uterine fibroid, in the expectation that at the menopause she will be restored to health and begin a new life, and then to realize that far from this dream being

fulfilled the fibroid becomes necrotic, extruded, or septic, and places her life in the gravest peril, and that she may die in spite of surgical intervention."

It is well known that fibroid tumours are rare under the age of twenty-five. Cavaillon² has reported a case in a child thirteen years old, when hysterectomy was performed. The tumour was very large and weighed 3 kilogrammes; it was entirely concerned with the wall of the body of the uterus.

TREATMENT.—Shaw-Mackenzie³ recommends that before resorting to operation for fibroids, a trial should be given to **Iodipin** in hypodermic injections of 10 c.c. (25 per cent strength) for ten days consecutively. He reports only two cases, and states that some improvement followed; but the cases were still under observation.

W. G. Spencer⁴ reports eight cases of hysterectomy performed by **Doyen's Method**, which he commends as being very satisfactory. As the technique of this operation is not yet, perhaps, very generally known or understood, Spencer's clear summary of it may prove useful. The preparation of the patient included the shaving of the pubes and the swabbing out of the vagina with perchloride of mercury through a speculum. The anæmic cases had a subcutaneous saline infusion during the operation. The abdomen was opened just below the umbilicus, the bladder being drawn up nearly to this point in one case. After a preliminary examination the patient was raised to about 30 degrees from the horizontal (Trendelenburg position) and the rest of the abdomen was well shut off. Then the broad ligament, including the tube near the tumour, or when the ovary was diseased the ovarian ligament, was divided between clamps on each side. The tumour having been lifted out of the pelvis and drawn forwards as much as possible, a cut was made with blunt-topped scissors in the middle line behind the tumour through the peritoneum. Keeping close to the tumour, partly by cutting, partly by blunt separation, the posterior vaginal fornix was opened. Then the vulsella seized the vaginal portion of the cervix and drew it upwards. Clamps were thereupon applied to the vaginal fornix laterally, then anteriorly, and after cutting it away the cervix could be drawn further upwards, and the finger could commence to separate the bladder from the tumour by working from below upwards. The separation of the bladder seems so much more easily done in this way than from above downwards. Having reached this stage, on each side the base

of the broad ligament forms a tense band reaching upwards to the tumour, which includes the stretched-out uterine artery and its branches, upon which can now be placed clamps with a certainty of securing the vessels. Where lobulated myomatous masses extended into the broad ligaments they were now drawn away with the main tumour, no force being required to shell them out. The ureters did not come into view at all, remaining outside the area of operation and being pushed downwards with the bladder. The vulsella holding the cervix being continually drawn upon, the tumour became gradually inverted over the pubes until there remained to be cut across the reflection of the peritoneum from the bladder on to the anterior aspect of the tumour. Now followed the application of ligatures over the numerous clamps, and a strip of iodoform gauze was passed downwards through the vagina until it could be seized at the vulva, the upper end of the strip lying in the subperitoneal wound just above the cut edges of the vagina. Finally, the cut edges of the peritoneum were sutured together across the pelvis in the line of the excised uterus and broad ligaments. The urine was drawn off from the bladder, and after two or three days the strip of gauze was removed and not replaced. In one or two cases the bladder and vagina were also irrigated for some days.

REFERENCES.—¹*Lancet*, June 6, 1903; ²*Jour. de Méd. de Paris*, Aug. 24, 1902; ³*Lancet*, April 4, 1903; ⁴*Ibid*, May 16, 1903.

FRACTURES.

Priestley Leech, M.D., F.R.C.S.

The operative treatment of fractures has not made any very great strides, and though vigorously advocated by some surgeons, there are not many reports of cases thus treated. Keetley¹ and Arbuthnot Lane² have both published papers on this subject. Mr. Lane's views are well known. It is impossible to give details of all the procedures adopted, but the general methods applicable to all operations on fractures are as follows: Have the fracture **Radiographed** in at least two planes crossing each other at right angles. Then get the skin of the part as clean as possible, and if it is a fracture of an extremity see that the surface of every portion of it is rendered so; this is particularly necessary in the leg. Wash the part with soft soap and hot water, and then apply to the foot a large hot boracic acid compress; replace this after a few hours, and remove the macerated epidermis. This process may require to be repeated several times. Then clean the whole leg with soap, water and spirit, shave the skin, and

apply a carbolic compress (1 in 40) for several hours. When on operating-table remove compress, place limb on sterilised sheets or towels, and wash the skin carefully with a germicidal solution. When this has been done put fresh sterilised cloths beneath the limb and over the trunk, so as to isolate the limb from the rest of the body.

The requisite instruments consist of ordinary carpenter's screws of varying lengths, of moderate gauge; have an ample supply of screws; have also virgin silver wire in varying thicknesses. Use the thickest wire within reason, and it must be of

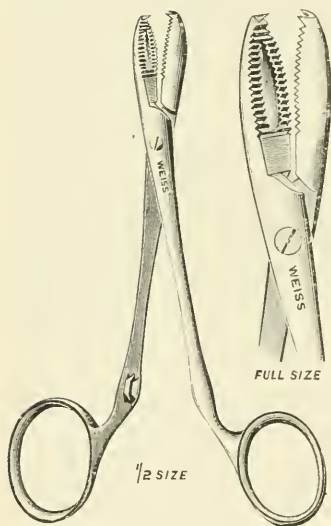


Fig. 9.

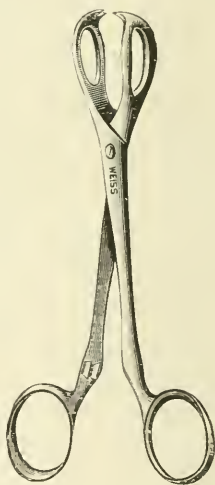


Fig. 10.

perfectly pure silver (10s. per oz.), as this best stands the strain of twisting. Before using the wire, cut it up into suitable lengths and straighten it; then heat it to a dull red heat in a flame and allow to cool completely before putting it in the solution with the other instruments. This renders it much more pliable.

The control of the hæmorrhage is a very important point, and Lane has had some special forceps made (*Fig. 9*), with teeth which can break through the intima in an artery, and render the application of a ligature needless; if ligatures are used the fingers are introduced into the wound, and this should be avoided at all

costs. When the incision has been made it is absolutely necessary to isolate the skin from possible contact with the wound or with the instruments used in it, and to do this a pad or towel is fixed to the skin by a pair of forceps (*Fig. 10*), and when held by an assistant on either side keep the wound open. A number of strong steel elevators, sequestrum and lion forceps in various sizes, and Peter's bone forceps; a number of drills of various sizes, screw-drivers, strong broad-bladed forceps for twisting the wire and pliers for cutting it, are necessary. A good needle holder must also be provided, since it is important that the needle should not be fingered.

An abstract of the discussion on the primary suture of fractures at the German Congress of Surgery in 1902 is given³; the balance of opinion was against suturing in simple fractures, except where there was very bad apposition, or if the fracture were near a joint.

Fracture of Femur.—Mr. Lockhart Mummery⁴ describes a method of treating fractures of the femur, which he thinks simpler and more easily managed than either the double inclined plane or Hodgen's splint. The splint is shown in *Fig. 11*, and is applied as follows: An extension stirrup is applied, with strapping from the ankle to the knee, in the usual way, and the stirrup is fixed round the foot-piece of a MacIntyre's splint, the thigh-piece of which should be made long enough to reach well up to the fold of the buttock. On the under side of the thigh-piece and close to its upper margin, a metal hook is fixed. An anterior splint is made from Gooch's splinting, or better of gutta percha padded with a double layer of lint, and fixed to the thigh with webbings passed round the MacIntyre splint. The fracture having been

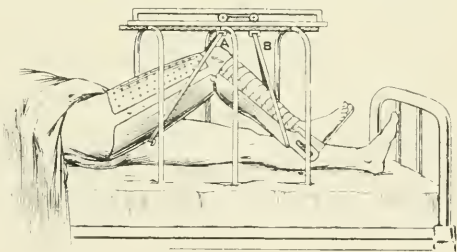


Fig. 11.

set, the splint is now adjusted with the knee bent nearly to a right angle, and the limb is fixed with webbings or bandages. A leather strap about an inch in width is now passed through the lugs on the carriage of a Salter's cradle, then round the thigh-piece of the splint and caught on the hook on the under

side. The buckle is then brought to one side, and the strap is tightened until the buttock and the thigh on that side are lifted off the bed ; when the strap is sufficiently tight it ought to be possible to pass the open hand beneath the buttock on the injured side. Another strap is then passed round the lower end of the splint and fixed to the cradle, to support the leg (*Fig. 11*). This strap must not be too tight, or it will depress the upper end of the splint. The upper strap will need tightening from time to time, and by removing the anterior thigh-splint the fracture may be examined. The weight of the thigh and buttock tend to slide off the splint, and draw the upper fragment away from the lower ; this latter is prevented from moving by the extension strapping and stirrup round the foot-piece and by the bent position of the limb.

R. W. Murray⁵ has looked up the ultimate results in seventy-six cases of fracture of the *tibia* and *fibula*. The results were much better than some surgeons say can be obtained by treatment by splints. He says if the fracture is situated in the upper two-thirds of the tibia, operation is seldom needed ; if the lower third is broken, and after the fracture has been set, one half or more of the fractured surfaces are in contact, and provided there is no rotatory displacement, an operation is not called for in the majority of such cases ; but if these conditions cannot be obtained the bones should be exposed and wired. In doubtful cases the occupation of the patient would turn the scale.

Patella.—In the “Lister number” of the *British Medical Journal*,⁶ v. Mikulicz Radecki makes a contribution to the treatment of fractured patella. He has had 45 cases during the last twelve years at the Breslau Hospital. In 16 the treatment was purely medico-mechanical without operation ; in 29 cases the fracture was sutured (in one case twice on account of a re-fracture). The indications and contra-indications are somewhat difficult to systematise. In one case suture of the bones was not done because the patient suffered from nephritis. As is well known, fracture of the patella may be caused by direct or indirect violence, which Mikulicz Radecki terms “blow” and “tear” fractures respectively. Pure “tear” fractures are not so common as was once thought, but there exists a third possibility which, according to his experience, occurs very frequently, viz., a combination of the blow and tear fracture. If one falls with a bent knee the quadriceps is powerfully contracted to save the fall, or right one's self, and at the same time the patella suffers

a blow from striking the ground or a projecting corner. The essential difference is that in the blow fracture the patella alone is broken, even if it is broken in several pieces, but the necessary ligaments remain attached to both sides of the patella: and these prevent any wide separation of the fragments, and the continuity of the quadriceps extensor tendon and the ligamentum proprium patellæ is maintained. The only criterion for diagnosis as to whether the fracture is a blow, or tear, or a combination one, is the behaviour of the quadriceps tendon. If the patient soon after the injury is able to straighten the knee, even with the help of a second person, this is a fact in favour of the maintenance of continuity, though patients sometimes are unable or unwilling to attempt this because it causes pain. If on the other hand, on attempting a movement of extension, one observes that the contracting quadriceps plainly draws up the upper fragment, and so perceptibly increases the separation, this shows a complete solution of continuity. In the same way in a similar case an increase in the gap occurs if the knee joint is passively flexed.

Starting from these principles, v. Mikulicz Radecki has with few exceptions abstained from suturing the patella in blow fractures, and limited himself exclusively to medico-mechanical treatment; whereas in combination and tear fractures, suturing of the bones was carried out. He dissents entirely from those who advise waiting for a time to see how function re-establishes itself. The decision to operate or not must be made at the latest by the end of the first week; for the later one operates the more difficult, as is well known, does the operation become in technical detail, and the more uncertain is the result.

The medico-mechanical treatment may be summarised thus: **Immobilization** of the joint for a short time with elastic compression to hasten re-absorption of the effused blood; massage of the knee-joint, especially the quadriceps, starting from the second to the fourth day. The patient gets up at the end of the first week, with a removeable plaster of Paris splint, which he lays aside at the end of the third week. At this period, careful active and passive movements begin, and finally exercises with medico-mechanical apparatus.

With regard to operation, he uses the transverse incision, long enough to expose the para-patellar ligaments and the torn part of the capsule; he **Sutures** the capsule and torn ligaments, and has used lately brass wire, using three or four sutures according to the width of the patella, and taking care that the cartilage is

not included. Throughout the whole operation asepsis is practised ; the blood clot is removed with a sharp spoon during irrigation with boiled salt solution. The wound is not drained, only about 1 cm. at each end being left unsutured. The after treatment of these sutured cases is the same as that of the unsutured, but the limb is immobilized for the first eight or ten days, so that medico-mechanical treatment begins a week later.

The foregoing applies to recent cases ; in later cases, say six months after fracture, there was always the greatest difficulty experienced in pulling down sufficiently the upper fragments strongly retracted by the shortened quadriceps. In most cases the tension of the muscle was abolished by making a V-shaped incision in the region of the rectus and cuneus, not in the tendon, which is converted into a Y by pulling down the lower ends. The continuity of the muscles was restored by sewing up the edges of the cut in the muscle with strong catgut sutures.

The final results in both operated and non-operated cases were very gratifying, and are illustrated by beautiful X-ray reproductions by v. Mickulicz Radecki's assistant, George Schmidt.⁷

Six successful cases of suture are published by K. Thienger, of Nürnberg.⁸ A. Schanz,⁹ in an old case of fractured patella with wide separation of fragments, was struck by the likeness to paralysis of the quadriceps, and **Transplanted the Sartorius**, with a good functional result.

Dr. H. Baerlocher,¹⁰ of St. Gall, publishes an account of 28 cases of fracture of the patella treated by the same surgeon, Dr. Feurer, twenty out of the 28 regaining their normal condition. Berger¹¹ whilst holding that suture and encircling ligatures remain the best methods of dealing with fractured patella in the absence of decided contra-indications, points out that such treatment, especially when practised by inexperienced surgeons, is not free from danger, and from complications so serious as to enforce the necessity of not neglecting the older forms of treatment.

REFERENCES.—¹*Clin. Jour.* Feb. 4, 1903, and Jan. 21, 1903 ; ²*Ibid.* July 2, 1902, and July 1, 8, 15 and 22, 1903, and *Pract.* Sept. 1902 ; ³*Cent. f. Chir.* July 20, 1902, *Ann. Surg.* Dec. 1902 ; ⁴*Lancet*, Feb. 28, 1903 ; ⁵*Ibid.* Sept. 18, 1902 ; ⁶*Brit. Med. Jour.* Dec. 13, 1902 ; ⁷*Beitr. z. klin. Chir.* xxxix Bd. 3 Hft. ; ⁸*Ibid.* xxxvi Bd. 3 Hft. ; ⁹*Münch. Med. Woch.* July 28, 1903, *Brit. Med. Jour.* Sept. 12, 1903 ; ¹⁰*Lancet*, Aug. 15, 1903, p. 501 ; ¹¹*Bull. et Men. de la Soc. de Chir. de Paris*, No. 8, 1903, *Brit. Med. Jour.*, May 9, 1903.

FURUNCLE.*Norman Walker, M.D.*

Desfosses¹ divides the treatment into local and general. Locally, in the early stage, abortive treatment should be tried: this consisting of painting with **Tincture of Iodine**, first removing a drop of pus, if present. If the boil develops, a 2 per cent **Carbolic Spray** may be used for two hours daily, or warm compresses of 1-2000 **Sublimate** may be applied, changing five or six times in the twenty-four hours. When the boil is mature, free incision by the knife or thermo-cautery is advised; the core must be got rid of. On the face early incision is necessary to avoid phlebitis. Internally **Tar** preparations, **Arsenic**, **Sulphur**, **Naphthol**, and **Salicylate of Bismuth**, or **Yeast** are the remedies recommended. Glycosuria or any constitutional trouble must be treated, and locally soap baths, alcoholic lotions, and minute care of the skin are often successful.

REFERENCE.—¹*La Presse Méd.* July 9, 1902.

Priestley Leech, M.D., F.R.C.S.

Gallois and Courcoux¹ have found that the local use of a solution of 4 grams of **Iodine** in 10 grams of **Acetone** proves useful in aborting boils. Acne may be treated in the same manner.

Cohn² suffered from a severe attack of furunculosis, and after trying many methods of both local and general medication, he used an ointment of **Ichthargan** with success; all internal medication is avoided, and the use of this ointment has given him better results than any other in private practice. The formula for the salve is:—

R	Ichthargan	10 grams	Lanoline	35 grams
	Distilled Water	5 grams	Vaseline	40 grams
	Glycerine	10 grams		

As soon as the incipient pimple or furuncle shows itself, he anoints it with a little of the salve, rubbing it first round the pimple and then over it, two or three times a day. When the inflammation has subsided, a 1 per cent **Ichthyol Paste** may be used.

REFERENCES.—¹*Gaz. des Hôp.* Jan. 20, 1903; ²*Clin. Jour.* June 10, 1903.

GALL BLADDER.*Robt. Hutchison, M.D.*

Functions.—The gall-bladder is generally looked upon as being the reservoir of the bile, as tending to regulate the pressure of this secretion, and as modifying in some way its composition. Prof. Woods Hutchinson,¹ in a most suggestive article, throws

grave doubts upon the capability of the organ to perform any of these alleged functions. From its constant presence in the lower animals, together with its high disease-liability, Hutchinson regards the gall-bladder, as also does Roswell Park, as a useless and comparatively functionless organ, a vestigial structure analogous to the vermiform appendix. Total cholecystectomy has been performed by the above-mentioned surgeon, and if the allegations concerning the organ be correct, such a proceeding is not only justifiable, but is in strict accordance with the highest principles of modern surgery.

Differential Diagnosis of disease.—Brewer² divides the common diseases of the gall-bladder and ducts into three main classes : Calculous, inflammatory, and neoplastic. He gives the following points as a guide in differential diagnosis :—

(1,) *Pain.* While the pain due to lesions of the biliary passages is usually fairly characteristic, yet there are many conditions in which the pain may closely simulate that due to these diseases, and it is therefore necessary to keep them always in mind. Such conditions are : Gastric ulcer ; appendicitis ; renal colic ; Dietel's crisis (in movable kidney) ; gastric crises of tabes ; inflammatory adhesions in the region of the pylorus or duodenum ; aneurysm of the renal artery and several other rare conditions.

(2,) *Tumour.* Those due to the gall-bladder are found in the right hypochondriac region. The author gives the symptoms and signs by which the causes of such tumours can be determined. The chief causative factors of such tumour formation are : (a) Accumulations of mucus (hydrops) ; (b) Accumulations of bile, from a non-calculous common duct obstruction ; (c) Distension with pus (empyema) ; (d) Cholecystitis with local peritonitis ; (e) Malignant disease.

(3,) *Jaundice.* This may be of two kinds, temporary and constant. (a) Temporary jaundice without other symptoms is suggestive of catarrhal obstruction of the common duct. Accompanied by colic it is suggestive of the passage of stone through the common duct. If there is intermittent jaundice, fever, and colic, it suggests floating stone in the common duct. (b) Continued jaundice with chills, fever, enlargement of the liver with tenderness, enlargement of the spleen, and general sepsis, suggests infective cholangitis. Progressively increasing jaundice, with enlargement of the liver but without distention of the gall-bladder, and with a history of preceding colic, is

suggestive of stone impacted near the papilla. Increasing progressive jaundice, without fever or pain, and with tumour of the gall-bladder, suggests common duct obstruction by a new growth. Jaundice is absent in from 80 to 90 per cent of all operative cases of gall-bladder or duct diseases. If it is preceded by colic, jaundice is practically always due to stone; if it is not accompanied by pain, then it is practically always due to inflammation or new growths of the ducts, or to pressure from outside.

REFERENCES.—¹*Abstr. in Med. Press*, June 10, 1903; ²*Boston Med. and Surg. Jour.* May 14, 1903.

GALL BLADDER (Surgery of) *A. W. Mayo Robson, F.R.C.S.*

Gall-stones.—The whole tendency in the recent surgical treatment of cholelithiasis has been in the direction of thoroughness. When gall stones have once formed, no medicine, so far as I know, can dissolve them or produce permanent relief, though much may be done by medical and general treatment for the relief of the catarrh so regularly associated with cholelithiasis, which may in fact bring on attacks not to be distinguished from true gall-stone seizures. Medical treatment must, therefore, always be tried fully before surgical measures are resorted to, but I think we are now all agreed that if after a fair trial, medical means fail, surgical treatment should be adopted before serious complications supervene, and before the patient is reduced by jaundice, suppuration, or other untoward manifestations.

While cholecystotomy is generally recognised as the operation to be aimed at in the treatment of affections of the gall bladder and bile ducts, it is often impossible to say what operation will have to be done until the abdomen is opened and the exact state of affairs made out. No surgeon should attempt the removal of gall-stones unless he is prepared for any of the various operations on the biliary passages, such as choledochotomy or cholecystectomy.

By means of the operation which I described,¹ it can be safely affirmed that there is no portion of the gall-bladder, cystic, common or primary divisions of the hepatic ducts, which cannot under ordinary circumstances be reached for the removal of concretions. The essential points in the operation are the use of a sandbag under the back to bring the ducts near to the surface, a free incision if needful extending upwards between the costal margin and ensiform cartilage, the raising of the

hepatic margin, or if required the rotation of the liver, and the conversion of the bile passages from the gall bladder to the duodenum into a straight line. By this method choledochotomy is as easy and as safe as an ordinary cholecystotomy, the safety being shown in the fact of my having had over 50 choledochotomies without a death. In the *British Medical Journal*, Jan. 24th, 1903, will be found a full description of the various modifications and improvements that have occurred to me in an experience of over 500 operations.

Where the gall bladder is seriously diseased, and the hepatic and common ducts can be declared free from obstruction, the tendency among surgeons generally is to favour cholecystectomy.

W. J. Mayo, Kehr, and myself, in a combined experience of nearly 2,000 operations on the biliary passages, are all agreed as to the freedom from recurrences of cases operated on for gall stones, if the bile passages have been thoroughly cleared; and we are all agreed as to the very small risk of operations for gall-stones, in the absence of malignant disease and of deep jaundice.

Retro-duodenal Choledochotomy.—Berg² points out that McBurney's method of removing an impacted calculus from the retroduodenal portion of the ductus communis through an incision made into the lumen of the duodenum, is difficult and not free from danger. It is not always possible to find the duodenal papilla of the duct, and beyond the slight risk of primary peritoneal infection, there is the serious one of the formation of an external duodenal fistula. The author describes the different steps of an operation which he has practised to his full satisfaction on the cadaver. This consists in making a vertical incision through the posterior parietal peritoneum on the right side of the descending portion of the duodenum, so as to mobilize this portion of the intestine, and to render it capable of being moved towards the left side of the abdomen, and also of being rotated in the same direction. By this rotation, the posterior surface of the intestine, together with the retroduodenal and papillary portions of the ductus communis, may be brought forward and freely exposed to view. The duct, it is stated, can be readily recognized when thus exposed, and whilst retained between the surgeon's fingers be incised for the release of any impacted body.

Primary Typhoidal Perforation of Gall-bladder.—Dr. J. F.

Erdmann³ has added 4 more to Dr. W. W. Keen's 30 collected cases; 4 only recovered, and these owed their recovery to timely operation. Of 27 cases not operated on, all died; of 7 operations 4 recovered.

Perforation of Gall-bladder.—Dr. H. A. Lediard⁴ has reported a case of perforation of the gall-bladder from gall-stones, which recovered after invagination of the perforation and purification of the abdomen.

In two cases under my care of perforation of the gall-bladder with partial extrusion of a concretion, recovery followed on cholecystotomy; and in two others of perforation and extravasation of bile, recovery followed on free drainage of the abdomen and of the bile ducts.

Kehr⁵ has reported a case in which he succeeded in removing a growth of the common bile duct and grafting the hepatic duct into the duodenum. Halstead had a somewhat similar case, also successfully operated on.

W. C. Mayo⁶ has also reported a successful case of removal of the ampulla of Vater for cancer. A year and a half later recurrence of the growth necessitated cholecystenterostomy.

Cystic Dilatation of the common Bile Duct.—Rostowzew⁷ has reported a case of the above condition in a girl of thirteen, in which drainage resulted in death the following day. The cause of dilatation appeared to be a fold of mucous membrane occluding the passage like a valve.

In October of this year I operated on a patient of twenty-eight, uniting the dilated common duct to the duodenum by means of a decalcified bone bobbin, with recovery and restoration to perfect health.

Actinomycosis of the Gall-bladder.—A case of this rare disease came under my care recently, and is fully reported in my work on Diseases of the Gall-bladder and Bile-ducts.⁸ It was cured by curetting, drainage, and the administration of **Iodide of Potassium**.

REFERENCES.—¹*Lancet*, April 12, 1902; ²*Centr. f. Chir.* No. 27, 1903; *Brit. Med. Jour.*, July 25, 1903; ³*Ann. Surg.*, June, 1903; ⁴*Lancet*, July 4, 1903; ⁵*Münch. Med. Woch.*, 1903, vol. 1, p. 101; ⁶*Northwest Med.*, vol. 1, No. 4, 1903; ⁷*Deut. Med. Woch.*, 1902, vol. 28, p. 739; ⁸3rd ed., *Ballière, Tindall & Cox*.

GALL STONES, (Medical Treatment of). (*See also* "Gall-bladder.")
Robt. Hutchison, M.D.

Preble¹ believes that we may dismiss as futile the attempt to dissolve stones that are already formed. Our efforts must

be directed toward preventing the formation of additional stones and the relief of troublesome symptoms.

With the first indication in mind we must recall the two essential conditions for the formation of calculi—stagnation of the bile and a lithogenic catarrh of the biliary mucous membrane. We must lessen the stagnation and the inflammation of the mucous membrane. Patients should be urged to give up the sedentary life they are usually leading, and take a reasonable amount of outdoor exercise. If they are wearing their clothing too tight, or lacing with corset or string, they should be shown the error of their ways. Massage is often a useful adjuvant, although there seems no use, and possible harm in efforts at massage of the liver and gall-bladder as advocated by some. The best diet is a simple, well-proportioned one, taken regularly and rationally, and in as small quantity as is compatible with the maintenance of nutrition. Every effort must be made to keep the gastro-intestinal tract in the best possible condition, both for the effect this has upon the stagnation of the bile, and upon the catarrh of the gall-bladder. In this way the circulation through the mucous membrane is improved, favouring recovery from the existing catarrh, and increasing the resistance to new infection and other causes exciting inflammation.

The diet and the exercise are probably the most important factors in accomplishing these purposes, but there is also a long list of drugs which have proved themselves useful adjuvants. **Mineral Waters and Salts:** Carlsbad, Epsom, Glauber, and others of similar character; **Mercurials, Salicylates,** and the various gastro-intestinal **Antiseptics,** are all used. So far as the treatment of the colic is concerned nothing need be said except to draw attention to the danger of the formation of the morphine habit, if the attacks are frequently relieved by this drug; but any patient having attacks so frequently that there is any danger of morphinism, furnishes in such attacks sufficient indication for operation.

Hirtz² also considers it important that patients having a tendency to gall-stones should take moderate exercise, and that women who suffer from them should not wear tight corsets. He thinks it advantageous in some instances to resort at times to an absolute **Milk diet,** and to add to the milk Vichy water. If an attack is threatened, it is important that the patient should remain at rest. In the way of internal treatment, for the purpose

of calming the patient, he advises **Hot Baths** lasting from twenty-five minutes to one hour, and the application to the painful area of poultices containing **Laudanum**, or of **Hot Compresses** or the following liniment may be used :—

R	Laudanum	ʒvj		Camphor Liniment	ʒv
	Chloroform	ʒj			

Simultaneously the following mixture may be given :—

R	Antipyrine	grs. xxx		Chloroform Water	ʒiv
	Syrup of Codeine	ʒij			

A desertspoonful every half hour or hour while the pain lasts.

In other instances it may be advisable to administer pain-relieving medicines by the bowel. The following rectal injection may be employed :—

R	Antipyrine	grs. xv		Hot Water	ʒiv
	Wine of Opium	℥ 15			

This injection is to be given after the bowel has been thoroughly evacuated by a clyster.

During the most violent crises hypodermic injections of **Morphine** are necessary. Care should be taken that the kidneys are active, as there is apt to be a deficient urinary flow. This is particularly important if morphine is used.

In the way of medicinal treatment between the attacks, hot baths and hot compresses are to be applied to the neighbourhood of the liver ; the bowels are to be moved by **Rhubarb**, **Cascara**, or **Carlsbad Salts**, and biliary flow and intestinal sepsis maintained by the use of the **Benzoate** or **Salicylate of Sodium**. These two drugs may be given in cachets as follows :—

R	Benzoate of Sodium	ʒij		Salicylate of Sodium	ʒiv
	Make into thirty capsules, and give one three times a day.				

Seymour Taylor³ warns against violent movements and exercises, or even prolonged manipulation of the region of the gall-bladder in cases in which gall-stones are suspected or known to exist. For an acute attack he recommends **Morphia** subcutaneously. He is doubtful of the value of **Olive Oil** as an aid in dissolving the stones, but thinks it worth a trial. It is best given by the mouth in $\frac{1}{2}$ -ounce doses every hour. **Enemata** of oil, warm water, or turpentine are also of use. He has sometimes seen benefit from the use of **Glycerin**. It may be given in $\frac{1}{2}$ -ounce or 1-ounce doses during the period when colic is the most pronounced symptom—*i.e.*, when a calculus is endeavouring to force its passage into the duodenum. Further,

the remedy may be continued with advantage, but in diminished doses (1 drachm), in the periods between the spasms of colic. He is strongly of opinion that it has great merits as a prophylactic agent.

Keown⁴ and Robinson⁵ both speak highly of the value of **Glycocholate of Sodium** as an aid in dissolving gall-stones or in preventing their formation, but Glaser⁶ denies its value. It is rarely necessary to give more than 5 grains three times a day, or, at the most, 10 grains. Smaller doses than 5 grains are not of much use unless extended over a long period. The drug should be administered in capsules, using magnesium oxide as the excipient. Occasionally the patient may suffer from nausea after taking the capsule, but this usually passes off in a few days if the medicine is persevered with. Rarely it produces a profuse diarrhoea for a day or two, when the stools become normal.

As regards the limits of medical treatment, Seymour Taylor is of opinion that operation is not absolutely necessary unless : (1) The patient has suffered from repeated and exhausting attacks from colic ; or (2) Unless there are signs of suppuration having occurred in the biliary passages ; or (3) Unless there are signs of complete obstruction of the common bile-duct.

Hirtz quotes Kehr, who makes the following suggestions in regard to the times when operative relief is necessary : In acute cholecystitis, in chronic obstruction of the common duct, in those forms of colic in which the condition is grave and medical treatment unsuccessful, when there is an angiocholitis or abscess of the liver, when there is perforation of the biliary passages and signs of peritonitis. Finally, surgical intervention is justified if the intensity of the hepatic colic is exceedingly severe.

REFERENCES.—¹*Jour. of Amer. Med. Assoc.* April 12, 1902 ; ²*Rev. Thérap. Méd. Chir.* June 15, 1902 ; ³*West Lond. Med. Jour.* July, 1902 ; ⁴*Jour. of Amer. Med. Assoc.* Aug. 16, 1902 ; ⁵*Med. Rec.* Jan. 31, 1903 ; ⁶*Corr. Blatt. f. Schweizer Aertze*, Feb. 1, 1903.

GASTRIC DISORDERS. Boardman Reed, M.D., Philadelphia.
Walther E. Rahte, M.D., Philadelphia.

High-frequency Currents in Gastric Atony and Dilatation.—Remarkably favourable results in a series of 17 cases diagnosed as atonic dilatation of the stomach treated by the **High Frequency Currents**, are reported by Alexander Crombie and T. J. Bokenham.¹ Considerable retraction of the boundaries could be made out after every treatment, and in 15 of the 17 cases definite cures,

not only of the dilatation as demonstrated by percussion, but also of the accompanying dyspepsia, are said to have resulted. Daily séances were given as a rule (the length of each not stated), and from ten to twenty were given in each case. The apparatus employed consisted of a Rhumkorff coil capable of giving a 12-inch spark with heavy discharge. The interruption of the primary circuit was at first effected by the ordinary vibrating hammer or by a mercury dipping break, but these have for a long time been discarded in favour of the improved Mackenzie-Davidson break, as made by Cox, which has for some months past worked excellently and with scarcely any trouble. The secondary wires of the coil are led to the inner coats of two Leyden jars of large capacity, which are furnished with adjustable discharges deadened by enclosing the discharging knobs in a glass-lined oak box. The outer coats of these jars are connected through a variable number of turns of thick wire, one of which is led to "earth," the other being connected to the lower coils of an Oudin's resonator. The current used for the treatment is obtained from one of the upper coils of the resonator, and it is a very rapidly surging alternating current of high voltage. This current is applied in a variety of ways by means of special electrodes, which may be classed as (a) monopolar brush electrode; (b) glass or ebonite "condenser" electrodes of various forms and capacity; and (c) moistened plate electrodes of flexible sheet-lead and of large size. As regards the electrical conditions set up when these different electrodes are used, there is considerable difficulty in speaking with certainty, so many factors have to be taken into account, while but little is really known about the actual physical conditions.

(a,) In the early cases treated the patient was placed on a couch, and the region of the stomach was "sprayed" by a brush electrode held at a distance just beyond that at which a direct spark would pass between the electrode and the skin. The effect experienced was described as similar to the dropping of a shower of warm sand on to the skin, and after a few minutes peristaltic movements of the stomach would often be distinctly felt.

(b,) A very convenient condenser electrode can be made by filling a large flat-bottomed flask with salt water and passing a wire through an indiarubber cork fitted to its neck, the free end of the wire being connected to the resonator. With such an arrangement the effect is, perhaps, more exactly localised to the region it is desired to influence.

(c,) The lead foil electrode is of such a size as to cover the whole gastric area ; close contact is secured by interposing a layer of wet flannel between the metal and the skin. With this the patient usually feels scarcely anything over the area of application, and the quantity of the discharge depends upon the electrostatic capacity of the individual. The effect of the application is in most cases highly invigorating.

It is probable that like results could be obtained by the high frequency currents produced by other forms of apparatus, including possibly those derivable from the negative pole of a powerful static machine. One of us has seen nearly as good results in numerous cases secured by vigorous faradic currents and abdominal massage, with the assistance of a stringent diet and gymnastic exercises. Crombie and Bokenham insisted upon what they call a dry diet, which consisted in the avoidance of indigestible foods, the allowance of only a minimum of fluid at meals, and no drinking within three-quarters of an hour before each meal, when hot water enough to meet the needs of the system could be taken.

Tri-phase Currents and other forms of Electricity applied to the Stomach. Herschell² has described and illustrated apparatus devised by himself and others for the application to various parts of the digestive tract of what is called the **Tri-phase Current**, according to him the most effective of all for the treatment of atonic conditions in the gastro-intestinal tract. The tri-phase is one form of what are called polyphase currents, which are derived from a dynamo by methods and under conditions which few except electrical engineers can understand ; but Herschell has succeeded in so far simplifying the application of them in practice that there seems to be no reason except the rather high price of the apparatus, why any physician should not be able to master the practical technique.

Vibratory Stimulation for Dyspepsia.—Pilgrim³ of New York has written a book about the wonderful things that he claims can be accomplished by means of what is called **Vibratory Stimulation** in all sorts of diseases, including various stomach troubles, with the help of a very simple form of apparatus. The principle is in the main the same as that of the machines for producing vibration which have long been in use, in Zander Institutes especially, but the instrument recommended by Pilgrim is simpler and more manageable, having a firm metallic arm with several joints to admit of turns in any direction. He advises

the application of vibration directly over the stomach for the stimulation of that organ and the pancreas, and also over the pneumogastrics in the neck and on the back, opposite the origins of the second to the fifth dorsal nerves. Excellent curative results are claimed by him and some other American physicians in the treatment of atonic dyspepsia, gastric dilatation, etc., by this method.

Alternating Currents applied to the abdominal sympathetic nervous system.—Dr. Samuel Sloan⁴ read a paper at a late meeting of the British Electro-therapeutic Society, reporting a large proportion of cures in atonic dyspepsia, visceral neuroses, etc., by applying **Faradic Electricity** with the electrodes placed over the same regions upon which Pilgrim advises the application of his vibratory apparatus, *viz.*, with the positive pole, in the form of a clay electrode 9 by 6 inches, between the shoulder blades, and the negative pole (9 by 10 inches of the same material) over the epigastrium, or “in front of the prevertebral plexuses of the nerve fibres and ganglionic cells of the abdominal sympathetic system,” as he puts it in one place. He employs a secondary coil of about 8,000 turns of fine wire, and the dose as measured by his faradimeter, should be 2 to 3 m.a., which as the case progresses may be gradually increased to 7 or 8 m.a. Each sitting may be fifteen minutes, longer if the coil has more than 8,000 turns, and a less time if it has fewer. Sloan called attention to the fact that this “dorso-abdominal faradization” causes at first temporarily a decided exhaustion, which he suggests may be due to the sudden absorption of toxins from the alimentary canal, caused by the stimulation of the sympathetic system, with the resulting increased absorbent power. He inferred this from the fact that as the case favourably progresses, the after-treatment exhaustion diminishes, through the amount of the toxins having been diminished as a consequence of the improved nutrition of the digestive organs. He was careful to explain that the exhaustion is merely temporary, and that when a sufficient rest is taken, it is followed by a sense of vigour and well-being. After the earlier sittings especially, the patient should immediately lie down for fifteen minutes, and after returning home rest recumbent for an hour. Treatments are given every second, third, or fourth day, and six to eight usually suffice. Improvement is not felt much at first, but develops gradually. Sloan’s particular method seems to be based on the theory that visceral diseases are very generally dependent

upon a fault in the sympathetic nervous system, and he therefore produces strong and prolonged stimulation of its plexuses as a sort of routine plan. The latter may be well adapted to many cases of nervous dyspepsia and uncomplicated atony of the stomach or intestines, but probably accomplishes less than methods based upon an accurate diagnosis of the exact lesion, when there exists displacement or actual organic disease in any of the abdominal organs.

The Management of Atonic Dyspepsia.—Carter⁵ gives some very sound advice on this subject, though he errs in stating that "the existence of dilatation does not always imply motor insufficiency." A stomach may be enlarged without being dilated—that is, there may be what Ewald calls megastrie or megalogastrie, corresponding to a hypertrophy in the case of the heart—but the word "dilatation" means a structural condition with thinning and weakening of the walls of any organ, as well as an enlargement of it. Carter says very truly "The vast majority of cases of simple indigestion in women arises from the way in which they dress. In such cases of dyspepsia I am strongly of opinion that an abdominal support which presses the abdomen upward instead of downwards should be substituted for the corset, if it is possible to persuade the patient to wear it." As to diet, he insists that it shall be such as enables the stomach to empty itself between the meals. A glass of hot water should be taken the first thing in the morning to cleanse the stomach, and, as a rule, it is better to take a few meals far apart, so as to give the organ time to rest, rather than a larger number of very small meals. When there is much fermentation, he would give mainly animal food, and supply part of the needed carbohydrates when necessary by rectal feeding. He has not much faith in medicines, especially antiseptics, but finds **Resorcin** the most useful of the latter, and **Strychnine** the most valuable of all drugs in such conditions. The **Scottish Douche** applied to the stomach is helpful, and he believes in electricity, but seems almost afraid to admit it, because of the many faddists who abuse it. He recommends **Massage** as a good substitute for exercise when this cannot be taken, but for some unexplained reason, objects to it in cases in which there is any fermentation, which is nearly equivalent to forbidding it in all cases of atonic dyspepsia, since fermentation is almost constantly present in such cases. Massage is now known to be one good means of ridding the viscera of gas from

fermentation, as well as an efficient method of curing its underlying condition, by strengthening the weakened muscles upon which it depends.

Suprarenal Extract in Gastric Dilatation.—Atony of the muscular structures of the stomach is the primary cause of dilatation of that organ, and this, it is claimed, can be effectually overcome by the use of the **Suprarenal Extract**. Vassale⁶ reports a series of cases in which the administration of from 5 to 10 minims, repeated several times in the twenty-four hours, promptly caused a subsidence of the characteristic symptoms. The action of this drug is not merely palliative; in the long run it restores a variable degree of muscular tonus, thus enabling the stomach to perform its motile functions. Once muscular contraction is restored, comparatively small doses of the extract suffice to maintain it.

Dietetic treatment of Indigestion.—Progress is making in the study of diet as one of the most potent means of remedying dyspepsia dependent upon the more serious forms of stomach trouble, but evidence accumulates to show that in many of the simpler functional derangements of digestion dependent upon nerve exhaustion, or upon any of the neuroses, severe dietetic restrictions are often not only needless and useless, but positively harmful—another strong argument in favour of differentiating dyspeptic ailments, and determining by modern exact methods the real lesions upon which they depend.

R. Hutchison,⁷ in an able address on dietetics, laid stress on the following points: The *personal factor* should dominate all dietetic questions, and every change of food must always be more or less of an experiment. Notwithstanding this, we need not give up in despair the attempt to formulate any rules of diet in health and disease. The diet should fulfil two well-defined conditions: (1) That the food yields enough potential energy to supply the daily outgoings from the body in the form of heat and work, and (2) That it contains enough proteid to replace the daily and inevitable destruction of tissue. As regards the potential energy, food should contain between 2,500 and 3,500 calories, depending upon the amount of work done by the individual. Part of the total energy must be supplied in the form of proteid. Whether the rest is to be obtained from carbohydrates or from fats, depends largely upon the digestive capacity of the individual. Physiologically, as far as the cells are concerned, it seems to be a matter of indifference whether fats or carbohydrates pre-

dominate, but ease of digestion seems best promoted by avoiding a preponderance of either. The exact quantity of proteid required seems to vary greatly in different individuals, probably with the bulk of their muscular tissue; and to some extent, also, it depends upon the amount of "proteid-sparers"—particularly carbohydrates—in the diet. In ordering a diet, the patient's likes and dislikes must not be altogether neglected. Another general principle which must be constantly borne in mind is the interdependence of organs, and in prescribing a diet suitable to the needs of one organ, the physician must never forget the requirements of others or of the body as a whole.

There are only three great groups of diseases in which one can reasonably anticipate that dietetic means will be potent for good. These are: (1) Diseases of the organs (stomach and bowels) which prepare and elaborate the food; (2) Diseases of metabolism (*e.g.*, fever, obesity, malnutrition, diabetes and gout) in which there exists a perversion of the usual methods of dealing with the nutritive constituents of the food by the cells; and (3) Diseases of the excretory organs (especially the kidneys) which are concerned in removing from the body the end products of the food.

As regards the dietetic treatment of dyspepsia—using the term in its widest sense—the meals must be small, and contain no ingredients which are difficult of solution. Cellulose in the vegetable foods, and tough connective tissue in the animal, are to be avoided. It is important to distinguish between functional and organic disease of the stomach when dealing with dyspepsia, for in the latter diet is everything, in the former it is of subsidiary importance.

In the dietetic treatment of disorders of the bowels, the mechanical condition of the food is the key to the situation. In diarrhoea a diet should be selected which will leave as little residue as possible, whilst in constipation the direct opposite should obtain.

Boardman Reed⁸ states that by means of diet, just as by medicines or the mechanical methods of treatment, one can either stimulate or depress the functional activity of various structures, and by the same means one can often do that which can seldom be done by any drug, to wit: save or spare a crippled organ, thus affording it at least relative rest, even while the other parts of the body may continue active. But in all cases with irritative conditions in the digestive organs, especially in

the more stubborn cases of excessive HCl secretion, whether an ulcer is demonstrable or not, one may sometimes cure rapidly by prescribing the treatment for gastric ulcer, which is to place the patient for a time at complete **Rest in Bed**, with at first either no food by the mouth or only small amounts of the blandest liquid nutriment in that way, supplementing this by **Rectal Feeding**. Typical examples of the irritative disorders which require such treatment are, in the stomach, round ulcer, hyperchlorhydria and acid gastritis, and in the intestines, diarrhoea, with probably also certain cases of spastic constipation, though a coarse diet often succeeds in the latter. This class of conditions is especially likely to be aggravated by many vegetables, especially cabbage, onions, and radishes, acid fruits, most of the uncooked vegetables and fruits, the spices and most of the sharper condiments, and meats in the form usually eaten. On the other hand, milk and whey, as well as rice and other farinaceous preparations, when well insalivated by thorough mastication, taken in small quantities at a time, and especially when the starch has been previously dextrinized by prolonged baking, conduce more to the cure of the same diseases. The meats are recommended by many authorities in hyperchlorhydria, because they combine with the surplus acid and thus often lessen the discomfort after meals; but the writer objects to this, as meat is known to stimulate secretion, and tends to intensify and perpetuate the underlying morbid state of the secreting cells. Clinical experience has shown that in hyperchlorhydria starch foods taken at the beginning of small meals, and thoroughly chewed, may generally be made to digest and agree well, especially when, by means of full alkaline medication or sedative electrization, the irritated condition of the glands is at the same time overcome. Exceptionally, however, cases of excessive HCl secretion complicated with much fermentation of the starch and saccharin foods, do better on a diet consisting largely of the blander nitrogenous foods, such as soft boiled eggs, beefsteak juice, meat powders, or finely hashed steak, with sometimes plenty of fat in some palatable form (since this lessens HCl secretion), and only a minimum of the carbohydrates.

In chronic asthenic catarrh of the stomach or duodenum, with good motor power and with normal pancreatic and hepatic secretion, one may expect favourable results from animal broths, meat juice, meat powders, especially Mosquera's beef meal, scraped or hashed lean beefsteak, or whites of eggs; and, in

the less severe cases, tender lean meats, especially beef, mutton, lamb or poultry, roasted, boiled, or thoroughly stewed, and whole eggs slightly cooked. With this diet, three or four slices daily of moderately stale bread and butter can usually be allowed. A free use of water, preferably taken rather hot, should accompany such a nitrogenous antiscatarrhal regimen, in order to stimulate all the excretories, and cleanse away the mucus from the affected membranes. When, however, in these or in any other cases the gastric motility is much impaired, fluids of all kinds must be strictly limited, and lavage must then take the place of copious water drinking. A milk diet often suits well, but sometimes fails or aggravates, especially when there is excessive lactic fermentation or deficient motor power.

When a patient's diet is restricted, he should be weighed from time to time to see that there is no undue loss of weight, and above all, a close watch should be kept upon the urine. In diarrhoea, the fruits and cruder vegetables are decidedly contra-indicated; but in uncomplicated cases of constipation, they favour normal evacuations, and should be tried in that condition. When, however, the constipation is due to a catarrhal process in any portion of the tract, such a coarse irritating diet will nearly always disagree.

Spastic constipation has not yet been fully studied, but it often yields to a diet containing much **Cellulose**, as is found in the vegetables and fruits.

In all gastro-intestinal affections, except in uncomplicated atonic constipation, the food should be easily digestible, not too fermentable, finely divided, and properly cooked. A point of greatest importance, too, is that starch food particularly should not only be cooked long and thoroughly, but also that it be well masticated.

The diet should *not* be restricted in pure nervous dyspepsia, when there is no considerable disease in the digestive organs.

In the dietetic treatment of the so-called uric acid diathesis, one should prohibit altogether the eating of the glandular portions of animals, such as liver, sweetbreads, calves' brains, kidneys, etc. In the worst cases the writer forbids also the meat soups, coffee, tea and sugar.

Digestive Intoxications caused by Fish.—Death from poisoning by fish is more frequent than is generally supposed. G. Vignon⁹ believes that either fresh or preserved fish may cause such accidents. In the first category are the venomous fish, which

are either constantly poisonous or are so at certain seasons of the year. With the truly poisonous fish, should be considered fish sick because the hosts of a species of *tænia*, or by reason of specific bacterial infection. Fish taken with poisoned bait, if not eaten immediately, or if the viscera are used, may also cause poisoning. It is quite easy to tell when canned fish are spoiled, for the cover is puffed out, the gelatin is liquefied, the fats are saponified, and the odour is characteristic. Fish poisoning is accompanied by three sets of symptoms: the gastro-intestinal, the nervous, and the exanthemic. The worst cases may recover in a few hours, or, in the nervous or paralytic variety they may last some days. The toxic agent is in all probability ptomato-atropine; though in ichthyosism it is probably not the sole cause, and individual susceptibility must be invoked to explain the extraordinary violence of the symptoms.

Acids in Gastric Disease.—A. W. Perry¹⁰ thinks that HCl as a remedy in gastric disease has fallen into disrepute because of the impracticability of administering it in large enough doses. The amount of HCl formed in the stomach daily equals 36 grms. of strong liquid HCl. This amount cannot possibly be given in less than 50 ounces of water, which quantity would be too great. When a proteid is digested with HCl, an organic HCl combination is formed, which in contact with pepsin is changed into peptone. By giving such a proteid combination it is possible to employ doses as high as 2 grms. of strong HCl without injury or discomfort. One heaped tablespoonful of this substance contains about one gm. of strong acid in the proper proportion to digest the meat with which it is combined, and 40 per cent additional. This organic combination of HCl is made by heating together till a paste is formed, 1 part of strong HCl, 50 parts water, and 16 parts boiled beef, ground to a coarse, moist powder. When prepared in this manner, the product contains about 7 per cent strong HCl. Perry recommends the administration, one hour before meals, of one half as much bicarbonate of soda as there is used of strong HCl, expressed in grains when the latter is used for a long period of time.

Investigation of the Gastric Functions.—Because of difficulties associated with the usual methods of testing the stomach contents, Sahli has provided a **Test Meal** which contains, as far as possible, equal portions of carbohydrates, proteids and fats. This method is reported in full by Seiler.¹¹ By determining the

amount of fat in the abstracted stomach contents, it is possible to learn the degree in which the gastric contents have been modified by the motility of the stomach, and how much by the secretory processes. The test breakfast used by Sahli consists of a porridge containing a rather high percentage of fat. The meal should amount to 350 c.c. of which 300 c.c. are given, either on an empty stomach or after a preliminary lavage 50 c.c. should be reserved for the estimation of the percentage of fat contained in the test-meal. The stomach is emptied in three-quarters to one hour, and the quantity withdrawn is measured and triturated according to the usual methods for quantitative estimations. Seiler, after considerable experience, concludes that this method is more accurate in determining the conditions of secretion and motility than the methods formerly employed. It yields especially concise information as to the quantity and acidity of the gastric juice, and allows an accurate diagnosis of any existing functional disturbance of the stomach.

Diarrhœa and Hyperchlorhydria.—Constipation most frequently results from excessive HCl. According to Surmont and Lerat,¹² two forms of diarrhœa may also be observed in hyperchlorhydria. One form is a paroxysmal diarrhœa, in which the evacuations (two or three) generally occur in the middle of the night, and are repeated after breakfast and dinner during the day. The evacuations are accompanied by severe epigastric and umbilical pain, which disappears after the first defæcation. There is in such cases extreme mental depression and fear of a recurrence of the attack. Diagnosis must be made from the crisis of locomotor ataxia, Basedow's disease, and intestinal neurosis. In the second form, the diarrhœa is chronic. It occurs in the early hours of the morning, or immediately after breakfast. Pain is variable, and its severity bears a relation to the nature and amount of the ingesta. The fæces are generally normal in character, but bilious stools may occur, and in some cases food particles have been found. The patients are emaciated, with poor appetite and abnormal hunger; intense epigastric and umbilical pain follows the ingestion of food. The condition should be diagnosed from enterocolitis, dysentery, cancer, and syphilis. This diarrhœa is probably due to pyloric insufficiency and increased peristalsis caused by the hypersecretion of mucus and water. It is a defensive provision against the excessive acidity of the chyme in hyperchlorhydria. The prognosis of the paroxysmal is much better than that of the chronic variety.

The treatment should be directed to the exciting cause—the hyperacidity ; but when **Bismuth** with **Alkalies** fail to stop the diarrhoea, as they often will, **Lemonade** and **Chlorides** act as almost specifics in these cases.

Failure of Gastric Secretion.—Physicians who regularly analyse the stomach contents of dyspeptic patients frequently encounter cases which for long periods show no HCl or ferments, as well as some in which secretion apparently never returns, and probably cannot return on account of atrophy of the glands. Some of the former kind, excluding those of true atrophy, are merely cases of neurasthenia with marked functional depression of the gastric glands ; others a result of profound anæmia, (not necessarily pernicious) or of other serious diseases which have so lowered the vital powers that not enough nerve force and blood can be supplied to the stomach to furnish the needed gastric juice. Clinically it is frequently impossible to differentiate such cases, and distinguish those due to atrophy from those dependent upon neurasthenia or other more or less curable forms of disease. One of the present reviewers (B. R.) has seen numbers of patients whose stomach contents failed to show any gastric juice at every examination for many months, and some of them for periods exceeding a year, and yet finally developed a normal percentage of HCl after a persevering course of appropriate treatment, including usually the administration of **Hydrochloric Acid** and **Pepsin**. Ewald very appropriately calls these cases, characterised by failure of gastric secretion of unknown origin, *anadenia gastrica*, and Einhorn classes them under a term of similar import, *achylia gastrica*. A recent writer, Ferannine, has described under the name *anachlorhydria* a similar condition, except that he seems not to have determined the presence or absence of the ferments in the cases reported by him. In a recent paper¹³ the latter expresses the opinion that anachlorhydria does not depend upon a lesion of the gastric mucosa, but upon a depression in the nerve supply of the lining of the stomach. It is found not infrequently in neurasthenics and hysterical persons. Primary anachlorhydria is transient, being functional in origin. Secondary anachlorhydria is often permanent ; however, it is not constantly so, since in secondary cases the absence of HCl may recur at intervals, and the amount of acid present may fluctuate considerably. The author reports two cases of anachlorhydria in hysterical patients. In the first of these the absence of HCl persisted for over two months

without interruption, although there were no signs of organic lesions of the mucosa, and the anachlorhydria was distinctly primary and functional. In the second case the anachlorhydria was secondary to a chronic gastritis, and appropriate treatment restored the normal amount of HCl in the gastric juice. The gastric and intestinal motility are not usually affected in primary anachlorhydria. As regards the treatment of this condition, the writer believes, in opposition to the views of most clinicians, that symptomatic remedies such as pepsin, HCl, etc., are of only temporary value, ceasing to have any effect as soon as they are discontinued. He has used **Pilocarpine**, the antagonist of atropine, for the opposite effect in anachlorhydria, and with fairly good results. He also advises injections of **Strychnine**, which, with the pilocarpine, tends to restore the normal HCl to the juice, and increases the motility of the stomach.

Einhorn some time ago reported one case of recovery from the condition of absent gastric secretion, and in a recent paper¹⁴ entitled "Remarks on Achylia Gastrica and Pernicious Anæmia" gave the histories of three cases, in all of which there was a return to normal secretory activity in from two to three years. He examined the blood in fifteen of his cases, and found it to be normal in eleven. In one there was a pernicious anæmia, and three cases showed merely a marked anæmia. He is not inclined to believe that pernicious anæmia is caused by atrophy of the stomach, for the following reasons: (1) In most cases of achylia gastrica a nearly normal condition of the blood is found; (2) We occasionally observe the presence of gastric juices in cases of pernicious anæmia, sometimes even in increased amount, as occurred in three of the cases reported above. If pernicious anæmia were caused by an atrophy of the gastric mucosa, he argues, the achylia would be well marked, as soon as the symptoms of the blood disease were apparent. He concedes that achylia and pernicious anæmia may occur together, but only in the minority of cases, and probably there then exists a common cause for both affections, or else pernicious anæmia finds a ready soil in cases of achylia.

L. Kuttner, of Berlin,¹⁵ discusses the question, accepting the definition established by Einhorn and Martius, that achylia gastrica is a condition in which there is a deficit not only of HCl and the ferments, but also one in which, to quote Martius, "no fluid whatever is secreted." He considers the name ill-chosen, and offers in support of his own view the following reasons:

(1.) The term itself is misleading, since "chylus" means lymph and not secretion.

(2.) The production of HCl and pepsin are two entirely different processes, and Kuttner includes in his article twenty-five tabulated cases in support.

(3.) The conception "achylia" involves the idea that the gastric juice fails completely. This Kuttner denies, quoting from experiments by Martius, Strauss, and Roth, to prove his point.

(4.) Further proofs are cited from (a) The experiments of Schneyer, who stimulated directly the nerves supplying the stomach in fasting dogs, and obtained a fluid in the stomach completely wanting in HCl and the ferments; (b) The experiments of Schiff, who during a fast injected pilocarpine, and obtained 150 c.c. of fluid containing pepsin but no HCl.

As regards the symptoms, Kuttner describes those given by Einhorn and Martius, stating also that the experience at the Augusta Hospital agrees with them in most points. He says, however, that in this hospital they have not found the parallel in the disappearance of HCl and the ferments to exist. There may be complete achlorhydria, and yet be positive and lasting eupepsia, or only a hypopepsia.

The differential diagnosis made by him is exhaustive, especially in reference to the stress to be laid upon the presence of particles of mucous membrane and small amounts of blood in the wash-water obtained from the stomachs in achylia gastrica. Kuttner denies their diagnostic value, asking in one place, "What in the world cannot be diagnosed from the presence of small amounts of blood and particles of gastric mucous membrane in the stomach contents"? Again he says: "The longer I have worked with the microscope over the particles of mucous membrane, the less I have valued their diagnostic significance." Clinically Kuttner claims the diagnosis to be impossible between the clinical picture of "achylia gastrica simplex" and the failure of gastric secretion due to (1) Gastric catarrh; (2) Atrophy of the mucous membrane, in the following conditions: (a) gastric carcinoma, (b) final stage of a chronic or toxic gastritis (c) an apparently individual disease, (d) benign pylorusstenosis, (e) carcinoma of remote organs.

Influence of Morphine on formation of Hydrochloric Acid.—H. Holsti¹⁶ reports the following results from his observations upon the effect of **Morphine** in hyperchlorhydria, which are at

variance with those of most previous investigators. After the injection of 1 to $1\frac{1}{2}$ cgm. of morphine, at the end of an hour the watery stomach contents were much diminished, and in nine cases were so viscid that they would hardly pass through the tube. At the close of the second hour they were much increased. The total acidity was considerably decreased at the end of the first hour, but the free HCl was most markedly lessened. In the majority of cases it gave no reaction with the usual tests. A patient took 4 mg. of morphine three times daily for two and a half weeks. The free HCl entirely disappeared, and the total acidity was reduced by one half. Numerous recent experiments by competent observers have demonstrated a contrary effect of morphine. Holsti concludes that unless the pain is very severe, **Belladonna** is preferable to morphine in the treatment of the usual varieties of dyspepsia, but nothing is better settled now than that belladonna lessens the secretion of HCl.

Posture as an aid to Digestion.—Ogarkow,¹⁷ by means of experiments, determined that the stomach empties itself most rapidly when the individual is lying upon the **Right Side**, and also when he is **Walking Rapidly**. When standing, sitting, lying on the left side, or walking slowly, the conditions are less favourable than when upon the right side, but somewhat more so than in a standing position. Link¹⁸ also is of opinion that in certain pathologic changes in the stomach it is important to have the patient keep a position upon the right side for a considerable time after taking food. It is claimed that this simple procedure is of considerable therapeutic value. A French writer, cited by *Medicine*, recently stated that the post-prandial position on the right side has proved of great service in cases of acute indigestion, and also in passive stasis of the stomach contents.

Proteid Digestion in the human Stomach.—According to the experiments of E. Heinrich,¹⁹ one-third of the proteids of cooked and finely chopped beef are dissolved in the adult human stomach during the first hour of digestion, and without the liberation of any free HCl. He found that the addition of an amylaceous food, like rice, to the meat, favourably influenced the process of proteolysis, on the average about 10 per cent.

Erophagy.—Air-swallowing is a neurotic manifestation met with most commonly in hysterical women. The symptoms in the slighter forms are a sense of discomfort and distension

in the epigastrium, and drowsiness shortly after a meal, followed by a rapid succession of explosive eructations in series of ten, fifteen, twenty or more. The volume of gas expelled is often very considerable. Bardi²⁰ found that 200 litres may be expelled in one afternoon. Such individuals may have the power of voluntary eructation, and in a dyspeptic subject this is presumptive of air-swallowing. The phenomenon can generally be arrested by causing the individual to keep the mouth open. When recognised the treatment must be directed towards (1) The neuropathic basis by moral suasion; (2) The pharynx sprayed with cocaine, or the application of blisters to the front of the larynx; (3) Avoiding medication which would be required for fermentive gastric catarrh.

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GASTRIC ULCER.

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Walther E. Rahte, M.D. Philadelphia.

Diagnosis.—Ewald¹ does not agree with the opinion of van Ijzeren, who is inclined to think that gastric ulcer is due to spasm of the pylorus. Ewald states that in the majority of cases no such spasm exists. The author has no hesitation in introducing a sound, in order to confirm a doubtful diagnosis of ulcer, but, as a rule, abstains from its use in cases in which there is no room for doubt. Hyperacidity was noticed in only 56·8 per cent of Ewald's cases. He observed on several occasions marked fluctuations in the degree of acidity, a point of great importance in cases in which the ulcer subsequently underwent cancerous degeneration. Hæmatemesis was observed in 203 cases out of 304. This is a symptom of value in differential diagnosis, but we must make sure that the blood is not of another origin. Hæmorrhagic erosions are accessory lesions of no particular importance, which heal rapidly, or possibly they

constitute the early stage of round ulcers, which later run their usual course. We can only guess at the location of a gastric ulcer, except when we find a tumefaction of the pylorus. The differential diagnosis must be from (1) Pyloric spasm; (2) A muscular hypertrophy or a cicatricial tumour; (3) A cancerous neoplasm. There are cases in which it is practically impossible to form a definite opinion, even after minute histological examination, whether we have to do with a slight lesion or a malignant growth.

The pain in round ulcer is far from being always typical; it may be confused with gastralgic manifestations from other causes. Loss of flesh and cachexia are comparatively rare. Hypertrophy of the lymphatic glands is only of secondary diagnostic importance. The state of the tongue is much more important; in cases of ulcer of the stomach it is generally red and moist, with little or no coating. Perforation of the ulcer is generally easy to diagnose, but we have no means of discovering whether or not perforation is imminent. Hour-glass contraction of the stomach is a sequel of ulcer. In addition to the usual symptoms, the diagnosis may be facilitated by the introduction of a thin india rubber ballon having the shape of the stomach, which is filled with air when in position; this ballon only distends the cardiac end of the stomach, whereas insufflation dilates the whole stomach. It is often impossible to ascertain whether the ulcer has involved the neighbouring organs. The secondary lesions may be mistaken for years for functional neuroses; this is particularly the case in the event of perigastric adhesions.

The diagnosis must be based on the anamnesis (round active ulcer), on the fact that the pain is always limited to the same spot, on the proportion of hydrochloric acid present, and on the existence of vomiting unaccompanied by gastrectasis.

Orthoform in the Diagnosis of Gastric Ulcer.—This further aid in the diagnosis of ulcer has been brought forward in America. Orthoform is a local anæsthetic, and when brought in contact with exposed sensitive terminal nerve endings, as in burns, ulcers, abscesses, etc., its influence is decided and prolonged. It is practically non-toxic. F. H. Murdoch,² because of these properties, uses **Orthoform** as a means of diagnosis of gastric ulcer. As it will not anæsthetize nerve endings when they are protected by skin or mucous membrane, it is certain that, if it relieves severe pain in the stomach, it can do so only by coming in contact with a surface from which the mucous membrane

has been removed. The author gives orthoform in the powder form, and has found that in suitable cases it gives relief in twenty minutes. Hence we have in orthoform a remedy which enables us to differentiate pain resulting from other affections in the epigastric region from that produced by gastric ulcer.

Three cases of Perforating Peptic Ulcer with atypical symptoms.—H. W. Bayley³ gives in detail the histories of three patients suffering from gastric ulcer with atypical symptoms.

The first case showed that gastric perforation can occur without the production of pain or abdominal symptoms of any kind. The only symptom of hæmorrhage into the alimentary tract was the passage of melænic fæces after an enema of normal salt solution.

The second is interesting as showing: (1) That in a condition of acute septic peritonitis there may be practically a normal pulse and temperature, and also that vomiting and abdominal tenderness are not necessary symptoms of this condition; (2) That collapse does not always accompany perforation, for in this case the perforation in all probability must have occurred nine days before death; and (3) That a peptic ulcer on the point of perforating may cause no digestive or abdominal symptoms whatever.

In the third case, also, collapse did not follow perforation, for the temperature half an hour after perforation had risen to 100.2°. The change in the aspect of the patient was the most valuable indication of perforation. Melæna was present without hæmatemesis or vomiting, and was probably due to the hæmorrhage occurring on the pyloric side of the constriction produced by the ulcer. In none of these three cases was there obliteration of the liver dulness.

Adhesive Perigastritis.—Perigastritis is a frequent sequel of gastric ulcer, appearing at the terminal period of that disease, and is accompanied usually by pain and vomiting. The pain consists of a sensation of weight or constriction at the epigastrium, and is liable to appear at any hour of the day or night, after or before meals, and is unaffected by the nature of the food or the position of the body. The vomited matter rarely consists of food; usually it is an acid liquid, clear or more or less opaque from the presence of mucus. These symptoms, while of great value, are not of themselves sufficient to affirm the existence of the affection, if objective signs are not present. M. Duplant⁴ collected 17 cases of perigastritis, verified by

laparotomy or by autopsy. In these he observed the following objective signs: Palpation in some of the cases revealed an abnormal resistance giving a sensation of induration; in other patients examined, the perigastritis appeared under the form of a hard superficial mass, due to the inflammatory neoplasm situated at the periphery of an old ulcer. All of these symptoms when they last for years, become aggravated at each attack, and are accompanied by all the signs of cachexia. The progress and prognosis of perigastritis is in direct relation to the condition of the ulcer. The treatment of perigastritis is that of gastric ulcer.

Olive Oil in Gastric Ulcer.—Walko,⁵ having successfully treated hyperacid conditions of the stomach with **Olive Oil**, decided to use it in the treatment of ulcer—a condition generally accompanied by hyperchlorhydria. **Milk** has been given in this condition, because it has the advantage of fixing acids, but it is not always tolerated. Riegel has pointed out that when milk fails, Gaertner's "fat-milk" may succeed, and it is but a step further to give fat in the form of olive oil exclusively. Olive oil has the following advantages: It is unirritating, of high nutritive value, readily absorbed, is not injurious to the motor functions, and does not undergo bacterial decomposition. It inhibits the secretion of hydrochloric acid, corrects constipation, and lastly, promotes the healing of the ulcer by forming a protective coating over it. With acute symptoms the oil is given in tablespoonful doses, which are rapidly increased to $1\frac{3}{4}$ oz. thrice daily. If the patient has an insuperable objection to the oil, $3\frac{1}{2}$ to 7 ozs. may be introduced in the form of an emulsion through the stomach tube.

REFERENCES.—¹*Med. Press*, Oct. 15, 1902; ²*New York Med. Jour.*, Nov. 24, 1902; ³*Lancet*, April 18, 1903; ⁴*Med. Press*, Feb. 4, 1903; ⁵*Centraltb. f. inn. Med.*, Nov. 8, 1902.

GASTRO-INTESTINAL DISORDERS OF INFANCY. *G. F. Still, M.D.*

Diarrhœa.—ETIOLOGY AND PREVENTION.—Perhaps the most interesting of recent contributions to this subject are those from the bacteriologists, particularly those published by Duval and Bassett,¹ who found in the stools of 42 cases of infantile summer diarrhœa a bacillus which they believe to be identical with the bacillus of dysentery described by Shiga. The cases in which it was found included cases of dyspeptic diarrhœa, of enterocolitis, and of marasmus with super-imposed infection; it was not found in the stools of healthy children, nor in those with

simple diarrhœa. Agglutination of these bacilli took place with the serum of adults suffering with acute dysentery, with the specific anti-dysenteric serum used by Shiga, and with the serum of other infants suffering from summer diarrhœa. It would seem, therefore, that some cases at any rate are identical in their etiology with the acute dysentery of adults, and as Shiga² has treated the condition in adults successfully with a specific serum, we can only hope that similar treatment may prove efficacious in infants also. Flexner³ states that he has prepared a serum which will render guinea-pigs immune to this infection, but further experiment is necessary before the practical value of such serum can be established. Unfortunately, the source of infection with the Shiga bacillus, or where it exists in external nature, is still a matter of question, but if this can be ascertained much may be done in the way of prophylaxis.

From the clinical side it has been suggested by Nash⁴ that the common house-fly and the blue-bottle fly play an important part in the causation of epidemic or summer diarrhœa in infants, and some coincidence between such epidemics and the appearance of large numbers of flies was specially noted. He advocates, therefore, the careful exclusion of flies from milk.

In New York⁵ a determined effort was to be made this year to prevent the fearful infantile mortality from summer diarrhœa by a systematic inspection of homes. The city is to be divided into districts, each with its inspector, who will enquire into the feeding of all the infants in his district, and see that medical treatment is obtained whenever it becomes necessary; and at the same time instructions on the care and feeding of infants will be sent to every home in which there is known to be an infant. That with some such care, and the use of clean milk, it is possible to reduce the terrible massacre of the innocents which occurs each summer in large cities, has been demonstrated by actual experiment in America. Kerley and Hughes⁶ record the result of such supervision in the case of fifty hand-fed infants of the poorer class, amongst whom there was not a single death.

TREATMENT.—Most writers insist upon the necessity for **Stopping all Milk Feeding** in cases of acute diarrhœa in infants. Synott⁷ considers that eight to twenty-four hours should elapse before milk-feeding is resumed in the case of breast-fed infants, while in the case of the hand-fed a longer period may be necessary. To replace the milk he would give **Dextrinized**

Barley Gruel, and sometimes in addition thin arrowroot water. Mutton or chicken broth, or beef-juices, may also be allowed ; but white of egg he considers a thing of the past, inasmuch as it is difficult of digestion, and may actually make the condition worse. In this opinion he follows Kerley,⁸ who regards the white of egg mixture as an "atrocious milk substitute," which forms a "putrefactive culture medium." This latter writer considers that there are only four drugs which are reliable in summer diarrhœa, namely, **Bismuth** (in doses of at least 10 grains), **Opium**, **Castor Oil**, and **Calomel**. Synott states that *bowel irrigation* has only a limited applicability ; it should be used only in cases where there is no tenesmus, and where the movements are not very frequent, but are offensive and contain much mucus. Where the onset is very acute, with much vomiting, irrigation of the bowel should be combined with *washing of the stomach*. He would avoid alcoholic stimulants as a rule, on the ground that they irritate the already inflamed gastric mucous membrane, and would substitute hypodermic injections of **Strychnine**, **Atropine**, or **Digitalin**. Pain may be relieved by the application of warm fomentations to the abdomen, and these may be combined with mild counter-irritants, such as camphor liniment, 1 ounce, with 5 minims of oil of mustard ; rarely it may be necessary to use **Morphia** hypodermically. At the onset a dose of **Castor Oil**, 1 to 2 drachms, should be given, and this may be followed by **Bismuth Subnitrate** with small doses of **Dover's Powder**. But he points out that opium does not necessarily do good even if it stops the diarrhœa quickly, for under these circumstances the temperature sometimes rises, and the occurrence of delirium suggests that some absorption of ptomaines takes place which may prove fatal. After the acute stage is passed mild astringents are useful : for instance **Tannigen**, alone or combined with **Bismuth**, 4 grains of each, is valuable.

There is some difference of opinion as to the best substitute for milk in these cases ; at the onset some would give boiled water alone for twenty-four to thirty-six hours, or boiled barley water, or rice water ; some still recommend the albumin water on which such scorn has recently been poured. Gordon Sharp⁹ recommends freshly-made **Beef-tea** from which all fat has been removed, or freshly-prepared **Whey**. Caro¹⁰ strongly recommends **Butter-milk**, (*see* "Infant-feeding"), prepared by adding 1 ounce of wheaten flour and $1\frac{1}{2}$ ounces of cane sugar

to every 2 pints of butter-milk, and boiling the whole for two minutes with constant stirring. From $\frac{1}{2}$ to 2 pints of this has been given daily to infants with frequent fluid stools containing undigested food, and in many cases it has rapidly stopped the diarrhœa.

Irrigation of the colon with **Oxygenated Water** has been recommended by Rocanz¹¹ for dysenteric diarrhœa in young children beyond the age of infancy. He employed the oxygenated water at twelve volumes, in the proportion of 1 to 5 of warm boiled water (oxygenated water $\bar{5}$ ij, sterilized water $\bar{5}$ x), and injected variable quantities according to the age of the child and the tolerance of the colon.

For administration by the mouth **Bismutose**, an albuminous combination of bismuth, has been advocated by Lissauer.¹² It is insoluble in water, so is given in the form of an emulsion in doses of at least 15 grains four times a day. **Protargol** also has been given by Norgren¹³ both in acute and in chronic diarrhœa. The solution used was $2\frac{1}{2}$ to 9 grains in 5 ounces of water, one teaspoonful five times a day for infants under twelve months.

Constipation.—This is often troublesome in infants, and it is not always easy to determine the cause. Fissure or ulcer of the anus, disproportionate length of the large intestine, intestinal catarrh from improper feeding or exposure to cold, deficiency of fluid in the diet, feeble peristalsis, and the indiscriminate use of opium by nurses to quiet the infant, are mentioned as causes by W. R. Jordan.¹⁴ He considers that the most useful drugs for the treatment of chronic constipation in infants are the saline aperients. To infants over six months he would give 2 grains of **Magnesia** and 8 grains of **Magnesium Sulphate** three times a day; to infants under this age he would give half this dose. **Cascara**, **Belladonna**, and **Nux Vomica** are valuable in the more obstinate cases. The value of **Massage** for constipation in infants is insisted upon by R. Hutchison,¹⁵ who considers that simple massage along the line of the colon from cæcum to sigmoid for five to ten minutes night and morning is sufficient, without using any preparation of aloes, as has been suggested, for inunction. Where drugs are necessary those should be used which have a tonic action on the bowel; for instance, some such formula as this may be used:—

R	Tinct. of Aloes	℥ij-v		Tinct. of Belladonna	℥ij
	Infus. or Syrup of Senna	℥xx		Tinct. of Nux Vomica	℥ss
	Compound infusion of gentian to one teaspoonful.				

This should be given regularly two, three, or four times a day until the bowels become regular, when it may be gradually omitted. The confection of **Sulphur**, half a teaspoonful once or twice a day, is also very effectual for young children.

Vomiting in infancy may be, and most often is, a symptom merely of some gastric irritation from faulty feeding, and in such cases is often associated with colic and flatulence. For such a condition **Calomel** in small doses, $\frac{1}{12}$ to $\frac{1}{3}$ grain, is often useful, and even for the more acute condition of febrile gastritis in infants calomel often acts not only as a disinfectant, but also as an antipyretic, quickly reducing the temperature to normal. Such is the experience of Schoen-Ladniewski,¹⁶ who writes in praise of calomel for many of the gastro-intestinal disturbances of infancy, and regards it as the best of all disinfectants for the alimentary canal. Hutchison, quoted above, insists on the value of **Stomach-washing** in the treatment of vomiting, both acute and chronic, in infancy; he would use either plain water or a solution of sodium bicarbonate, a drachm to a pint of hot water, and after completing the washing would leave an ounce or two of the fluid in the stomach, where the hot water acts as "a kind of internal poultice" and is soothing.

But the vomiting of infancy may have a more sinister significance when it has begun shortly after birth, is more or less intractable, and is found to be associated with visible peristalsis of the stomach, and a palpable tumour in the region of the pylorus. Such is the clinical picture of the so-called *congenital hypertrophy of the pylorus*. Until recently such a condition was thought to be incurable and inevitably fatal, but several cases of recovery have now been recorded—a few with medical treatment only, and more with surgical treatment. Cautley and Dent¹⁷ consider **Pyloroplasty** to be the most suitable procedure in these cases, and have saved two cases by this method. Others have tried **Pylorotomy** or **Gastro-enterostomy**. The present writer¹⁸ has advocated **Simple Stretching of the Pylorus** (Loreta's operation) if any operation is necessary, but has emphasized the fact, which is becoming increasingly evident, that a certain proportion of well-marked cases of congenital hypertrophy of the pylorus can be cured by medical treatment, particularly by repeated **Washing of the Stomach**, without any operative interference. Even simple **Care in Dieting** may apparently be sufficient, as in a case recorded by Dr. H. W. Gardner.¹⁹

Recurrent vomiting in older children may well be mentioned

here. A new and interesting light has recently been thrown upon it by observations on the urine in these cases. The presence of *acetone* in the urine has been found to be common, and is thought to indicate some disturbance of metabolism, with a resulting toxæmia. The breath sometimes has a distinct acetone odour quite early in the attack, as in a case recorded by Guinon,²⁰ and the vomit may also have the peculiar smell. Shaw²¹ mentions large **Rectal Injections** of normal salt solution twice a day as having been found useful by Marfan in the treatment of this condition, and he considers hypodermic injections of **Morphia** or rectal injections of **Chloral** as valuable. But at best the treatment of this curious disorder is most unsatisfactory, and all observers are agreed that during the attacks dieting seems to have no effect whatever, and probably it is best to give the stomach absolute rest for several hours and administer a purgative at the onset.

The most important contribution to the therapeutics of recurrent vomiting is that made within the past few months by D. L. Edsall,²² of Philadelphia, who has suggested that in view of the acid intoxication in these cases large doses of a readily diffusible alkali, such as sodium bicarbonate, should be given. He advises that immediately any premonitory symptoms of the coming attack are observed extremely large doses of **Sodium Bicarbonate** should be given; at least 100 grains should be given as rapidly as possible, and he recommends that the administration should be pushed far enough to render the urine decidedly alkaline, and this alkalinity should be maintained until the symptoms have disappeared. In the interval between attacks he would keep the urine "about neutral." The success of this method of treatment has already been proved in several instances by E. L. Pierson²³, who gave as much as 125 grains of sodium bicarbonate in twenty-four hours.

REFERENCES.—¹*Amer. Med. in Brit. Med. Jour.* Oct. 11, 1902; ²*Med. Rec.* Sept. 13, 1902; ³*Proc. Med. Assoc. of New York in Med. Rec.* Nov. 1, 1902; ⁴*Lancet*, Jan. 31, 1903; ⁵*Arch. Ped.* July 1903; ⁶*New York Med. Jour.* Nov. 22, 1902; ⁷*Med. Rec.* Aug. 23, 1902; ⁸*Arch. Ped. in Treatment*, Nov. 1901; ⁹*Lancet*, Nov. 8, 1902; ¹⁰*Arch. f. Kinderheilk.* in *Brit. Med. Jour.* Jan. 31, 1903; ¹¹*Med. Press*, Dec. 18, 1901; ¹²*Deut. Med. Woch.* in *Brit. Med. Jour.* Dec. 27, 1902; ¹³*Nordiskt Med. Arkiv.* in *Brit. Med. Jour.* Nov. 15, 1902; ¹⁴*Birm. Med. Rev.* Nov. 1902; ¹⁵*Clin. Jour.* Feb. 18, 1903; ¹⁶*Jahrb. f. Kinderh.* in *Brit. Med. Jour.* Nov. 22, 1902; ¹⁷*Lancet*, Dec. 20, 1902; ¹⁸*Ibid.*; ¹⁹*Ibid.*, Jan. 10, 1903; ²⁰*Gaz. des Mal. Inf.* in *Arch. Ped.* May, 1903; ²¹*Arch. Ped.* Nov. 1902; ²²*Amer. Journ. Med. Sci.* April, 1903; ²³*Arch. Ped.* July, 1903.

GLAUCOMA.*A. Hugh Thompson, M.A., M.D.*

Marple¹ gives a useful summary of the results, as far as they are known, of **Resection of the Cervical Sympathetic Ganglia** in glaucoma. The operation has been performed 86 times since 1897, and may be regarded as a relatively harmless one which, *as yet* (in the cases operated on for glaucoma), has not injured the eye or the general health of the patient. There can be no question, he says, that in a considerable number of cases, the operation has been followed for a time by diminution of tension and contracted pupils, and later by increase in the size of the visual fields. Surely the same may be said of the non-operative treatment by **Eserine**. So far as permanent benefit goes, there is really very little evidence. Among all the cases the writer found, only 13 had been under observation for one year or more, and of these it could only be claimed for 7 that there was anything more than temporary improvement, while in other cases relapses occurred. The most that can be said in favour of the operation at present is that it may possibly supplement **Iridectomy** in cases where that is contra-indicated, as in hæmorrhagic glaucoma, or where in the case of a second eye, iridectomy has resulted disastrously in the first. These, however, are just the cases where if an operation was indicated at all, most English surgeons would resort to **Sclerotomy**.

Stedman Bull² (New York) gives the post-operative history of 50 cases of simple chronic glaucoma on which he performed **Iridectomy**. The importance of this article lies in the length of time—from one to twenty years—during which the patients (all the cases occurring in private practice) were under observation. Of the fifty cases, in all but six the disease was bilateral, and the operation was performed on both eyes. Summarising the results, in the 94 eyes operated on, the operation did not prevent gradual failure of central vision in the majority of cases, and in two eyes, both of which had telescopic fields, immediate failure was the result. On the other hand, there was maintenance of existing central vision for a long period, in between one-third and one-fourth of the cases operated on. Even in these cases, however, it would be a mistake to use the word "cure," as in all but a very few the contraction of the visual fields for both form and colour seems to have been slowly progressive.

Age in itself did not seem to exercise any definitely bad effect, for some of the most satisfactory results occurred in patients over seventy years of age. The best results were obtained in those

cases where the operation was performed at an *early stage* of the disease.

Major Herbert³ in a communication to the Ophthalmological Society, dealt with 130 cases in which he had operated on chronic glaucoma by the formation of a **Subconjunctival Fistula**. In most cases the method adopted was to perform a small iridectomy and to leave a fold of the iris prolapsed between the lips of the wound. In this way he had been able to obtain a permanently fistulous cicatrix. He recommended the operation as suitable for advanced cases, or those in which an ordinary iridectomy had failed. He admitted the possibility of irido-cyclitis, or even sympathetic ophthalmia, and it was on these points that criticism of his paper mainly turned.

REFERENCES,—¹*Med. Rec.*, May 10, 1902; ²*Ibid.* Oct. 4, 1902; ³*Brit. Med. Jour.*, June 27, 1903.

GLIOMA. (See "Eye.")

GOITRE.

Robt. Hutchison, M.D.

Berry¹ divides all thyroid swellings into four groups: (1) Parenchymatous (bilateral) goitre; (2) Encapsuled tumours (solid and cystic); (3) Exophthalmic goitre; (4) Malignant disease.

(1,) *Parenchymatous Goitre* is the common form in young people. It causes a bilateral and uniform swelling. The best way of detecting very slight degrees of it is to place the finger and thumb on each side of the lower part of the larynx, and to ask the patient to swallow. As the larynx rises it draws the gland up between the finger and thumb, which are thus enabled to judge of its exact size.

(2,) *Encapsuled Tumours* are extremely common, and are the most amenable to surgical treatment. A very large proportion of the goitres met with in Switzerland, Derbyshire, etc., consist of encapsuled adenomata. Many of them undergo transformation into cysts. A swelling which is strictly unilateral, and which is neither inflammatory nor malignant, must, with certain very rare exceptions, belong to this group. Whether it is cystic or adenomatous is not a matter of much practical importance. If there is doubt as to whether a goitre is parenchymatous or encapsuled, it is well to administer **Thyroid** for a few weeks prior to operation; for a parenchymatous goitre or the parenchymatous portion of the goitre will thus become softer, and the adenomatous part more evident.

(3.) The diagnosis of *Exophthalmic Goitre* must depend more upon the general symptoms than upon the local characters. Mere rapidity of pulse is not sufficient to establish the diagnosis, especially if the goitre be unilateral and deeply seated behind the clavicle or sternum, as goitres in this situation are often accompanied by rapid pulse.

(4.) In the diagnosis of the *malignant* form it is well to remember the rule that if a tumour appears in the thyroid of a person over forty, if it is hard and steadily increasing in size, and is not inflammatory, then its malignant nature should be strongly suspected.

TREATMENT.—In the great majority of parenchymatous cases no operation is necessary. Dyspnœa alone justifies it; mere deformity never. Most of such cases yield to treatment by **Thyroid Substance**. The encapsuled tumours, on the other hand, cannot be successfully treated by medical means. **Enucleation** is for them the proper method of procedure. For other forms, on the other hand, **Extirpation** is a more suitable method, as attempts to enucleate non-encapsuled tumours are apt to be accompanied by severe hæmorrhage. Berry believes that cases of exophthalmic goitre requiring operation must be very exceptional. Occasionally benefit can be obtained from **Ligature** of two or three of the thyroid arteries, but even this is by no means devoid of risk. Operations on the cervical sympathetic he regards as altogether unjustifiable.

Cuthbertson² recommends **Hydrastis Canadensis** as a remedy in goitre. He has effected a cure in 25 cases of the goitre of puberty or pregnancy by its administration, one of which had already been treated with thyroid without benefit. He does not mention the dose required.

REFERENCES.—¹*Lancet*, May 3, 1902; ²*Med. News*, April 5, 1902.

GOITRE, (Exophthalmic).

Robt. Hutchison, M.D.

ETIOLOGY.—Two main theories of the etiology at present hold the field. One of these—the toxic theory—ascribes the symptoms to a toxæmia brought about by the presence of an excess of normal thyroid secretion in the circulation, or to the production of an abnormal secretion by the diseased gland. The other, or nervous theory, assigns as the cause of the disease a lesion of the central nervous system, probably at the base of the brain. Recent publications bring forward evidence in support of both of these views. The great argument in favour

of the toxic theory is, as Koch rightly points out, the undoubted benefit which often follows excision of part of the diseased gland. No one has, however, yet succeeded in producing genuine exophthalmic goitre by administration of an excess of thyroid substance, nor, as the writer has shown, does an extract of the gland from cases of exophthalmic goitre produce any other symptoms than those which follow from the administration of ordinary thyroid substance. On the other hand, there is much to be said for the nervous theory. The onset of the symptoms after severe nervous shock has frequently been pointed out. Hale White¹ has recently described two cases in one of which the patient traced the onset of the malady to shock after the death of her child, whilst in the other the disease set in shortly after the patient had been "jilted." Murray² also describes several similar cases, whilst Blake³ goes so far as to describe Graves' disease as a condition of "permanent fright."

On the experimental side Tedeschi,⁴ operating on dogs, has recently found that if the restiform bodies are injured anteriorly—just behind the acoustic tubercle—most of the symptoms of the disease ensue, namely, exophthalmos, enlargement of the palpebral fissure, tachycardia, tremors, and sometimes polyuria and glycosuria. The experiments, however, were not decisive as regards what happens to the thyroid. In favour of a primary influence of the thyroid is the fact that a simple goitre may precede for years the appearance of the other symptoms. Murray noted this in 14 out of 120 cases. On the other hand, however, the thyroid may not be enlarged although all the other signs of the disease are present. This was the case in $2\frac{1}{2}$ per cent of Murray's cases, and Harry Campbell⁵ is of opinion that these "overlooked forms of Graves' disease," as he calls them, are far from uncommon. The view that the parathyroids may play some part in the production of the symptoms is still *sub judice*.

The following sketch of the earlier theories on the etiology of the disease is taken from an elaborate monograph by Albert Kocher,⁶ published last year, which also indicates his own views. He states that Basedow inclined to the belief that the condition depended upon a primary blood change, and regarded the symptom-complex as a sequence thereto. Kocher calls attention to the fact that there is no characteristic alteration either in the blood-corpuscles or in the hæmoglobin content ; furthermore,

while Basedow asserts that there is an antecedent chlorosis, it may be positively stated that this condition is altogether exceptional. He inclines to the belief that in many cases anæmia, the beginning of puberty, or unusual demands upon the circulatory system, may light up the disease: it is apparent that these influences positively affect the chemistry of the thyroid gland.

Stokes advanced the opinion that Basedow's disease usually follows a primary heart lesion; but Kocher quotes two cases with compensated mitral insufficiency which were cured by operation without in any way affecting the heart lesion, showing non-interdependence of the two conditions.

Lempke regards Basedow's disease as an affection of the muscular system. Kocher admits that many of the symptoms appear strongly to support this hypothesis, and quotes Askanzi's statement that there is found in these patients a histological muscle change, the so-called lipomatosis.

Renaut, basing his opinion upon the histological findings of the affected gland, regards cirrhosis as the typical picture in Basedow's struma, attributing this to a faulty lymph circulation. Kocher confirms Müller's statement that in almost all cases of Basedow's disease the lymph glands of the neck are markedly enlarged, and believes that Renaut's theory is in a certain sense tenable, but considers the alteration of the lymph circulation rather as a consequence than a cause of the disease.

Charcot advanced the neurosis theory, alleging as the cause an alteration of the ganglion cells of the cerebral cortex, a theory also ably advocated in Germany by Buschan. Kocher says that the best evidence against this theory lies in the beneficent influence of operation. On the other hand, the importance of nervous influences must not be overlooked in the small percentage of cases occurring in individuals of a neurotic heredity. Answering Buschan's assertion that the cases cured by operation are not genuine, but pseudo-Basedow cases, Kocher refers to his own 91 operated cases as sufficient to prove its fallacy. Kocher's individual belief is that the complicated clinical picture cannot be satisfactorily explained by the assumption of a definite change in the sympathetic fibres limited to the cervical branches. He thinks it more likely, and in consonance with both the clinical and anatomical findings, that there is an involvement of the entire sympathetic system, including the vaso-motor centre.

TREATMENT (Medical).—The treatment by **Anti-thyroidin** is a new method based on the view that the symptoms of Graves' disease are due to an over-production of thyroid secretion. It was introduced by Ballet and Enriquez, who thought that good results might be got by introducing into the bodies of such patients the blood-serum of animals from which the thyroid had been removed. They conceived it possible that such serum might contain an excess of poisonous substances normally neutralised by the thyroid secretion, and that by the administration of such substances the harmful action or the excessive product of the thyroid gland might be neutralized. The use of the blood of patients with myxœdema was suggested by Burghardt, while Lanz suggested the use of the milk of goats upon which thyroidectomy had been performed. Moebius has used with success a preparation made by Merck, from the serum of sheep from which the thyroid had been removed. Schultes,⁷ shortly after Merck's remarks before the society of Mid-German psychiatrists and neurologists, met with a typical case of Graves' disease with characteristic manifestations and serious mental symptoms. This patient was treated with **Rest and Anti-thyroidin** in doses of from .5 to 4.5 grammes (grs. vijss–lxvij) three times a day. Forty-nine days after the beginning of the treatment the patient was discharged from the hospital almost entirely well. The mental symptoms and the tremor had entirely disappeared, and the goitre diminished materially in size. No unpleasant results were noticed from the treatment. Goebel⁸ reports a case in which favourable results were apparently obtained by the use of milk from a thyroidectomized goat.

Murray,⁹ from an experience of 120 cases, writes that no hard-and-fast lines can be laid down for treatment, which has to be adapted to the special symptoms present and the social position of the patient. In the first place comes the general hygienic treatment. If the symptoms are severe, **Absolute Rest** in bed for three or four weeks is essential. In cases in which the nervous symptoms are predominant, or when there has been rapid emaciation, rest in bed may be combined with isolation, liberal feeding (especially with milk), **Massage**, and **Electricity**; in other words, a course of what is known as **Weir-Mitchell Treatment**. In less severe cases at least twelve hours should be spent in bed, from 10 p.m. to 10 a.m., breakfast being taken in bed. In addition to this, in many cases the patient should lie down from 2 to 3 p.m., and from 6 to 7 p.m. A quiet life in

the country or at the seaside, as free as possible from excitement or effort, is most suitable. As much time as possible should be spent in the open air.

Electricity is useful in many cases, but is not sufficiently employed, owing to the modes of application recommended being too elaborate. The faradic current may be employed easily and efficiently by a method first described by Sir Victor Horsley. Two flexible metal electrodes, about 4 inches long and 2 inches wide, covered with wash-leather, which are connected by a small strap and buckle on each side, are moistened and accurately applied to the neck. One electrode is placed in front over the thyroid gland, and the other over the back of the neck, and connected with the secondary coil of a small dry-cell faradic battery, sufficient current being turned on to produce a distinct pricking sensation. The faradic current should be applied in this way for an hour each night and morning for several months. Not only do patients feel relieved for a time by each application of the current in this manner, but steady improvement takes place under its continued use.

In many cases no special diet is necessary. When there is any emaciation a liberal diet is required, which may be supplemented by two extra pints of milk in the day. If there is great emaciation, forced feeding may be necessary.

In a large number of cases, and especially in those which are seen in hospital out-patient practice, we can, unfortunately, carry out little more than medicinal treatment, and often in circumstances which are not at all favourable to recovery. **Belladonna** was frequently prescribed, and was useful in some cases, but Murray has often been disappointed in the results of its use. To be of service in exophthalmic goitre, any line of treatment should be steadily maintained for some weeks or even months, and patients often dislike to continue taking belladonna in sufficient doses to produce physiological effects. **Convallaria** has proved useful in cases in which the frequency of the pulse has been very high, and is more effectual in lowering the pulse-rate than other cardiac tonics. **Bromides** are useful in cases in which there are marked nervousness and tremors. **Arsenic** is useful in nearly all cases, and may be combined with other drugs with advantage. The best results are obtained by giving small doses of 3 or 4 minims of Fowler's solution three times a day for a month or two, or for the first three weeks of each month for five or six months. Of the animal extracts,

Thymus and **Suprarenal Tablets** have both been of service. Thyroid extract is harmful, as it often exaggerates the symptoms, and should not be given in exophthalmic goitre. Special measures are frequently required for the treatment of urgent symptoms. The sudden attacks of diarrhœa were readily controlled by **Laudanum** and dilute **Sulphuric Acid**. Severe attacks of palpitation with very rapid pulse yielded to the application of an **Ice-bag** to the præcordial area. Persistent vomiting in acute cases is difficult to treat : on the whole **Rectal Feeding** and the administration of **Morphia**, either subcutaneously or by the rectum, gave better results than other lines of treatment.

Abadie and Collon¹⁰ report interesting results from the injection of **Iodo-ether** into the enlarged thyroid gland, a plan first recommended by Pitres (at the Medical Congress at Lille in 1899), who stated that of 12 patients so treated 6 were cured and the rest improved. A series of 24 cases have been treated by the authors, and the following conclusions are drawn : (1) To 20 grms. of ether are added 4 grms. of iodoform, and of the solution 1 c.cm. is injected per dose into the most prominent part of the thyroid gland, carefully avoiding any large vessels ; (2) A notable diminution of volume of the thyroid occurs at the time of injection, and among the subjective feelings are a sense of swelling of the neck and slight choking ; pinching and darting pains are felt on the side of the neck, jaw, face, and ear, and a short, dry cough may be excited ; (3) No inflammation was noticed as a result of injection, and only in one of the 24 cases was there any untoward symptom, namely, fainting ; (4) The ages of the 24 patients varied from fifteen to fifty years, and the exophthalmic goitre occurred in all degrees of severity ; (5) When partial improvement occurred injections were given at intervals of a few days until improvement was complete ; such improvement included disappearance of such symptoms as cephalalgia, agitation, emotional irritability, amenorrhœa, polyuria, and neuralgic pains about the eyes ; then followed abolition of tachycardia, and anginal attacks, trembling, and exophthalmos ; while appetite improved and strength returned, so that work could be resumed by the patient ; (6) The general results of treatment were that 12 cases were cured, 9 showed notable and permanent improvement, and 3 temporary improvement. The injection was always done under strict antiseptic conditions.

Leroy and Verslin¹¹ attach great importance to hygiene in the treatment of the disease, and they describe a well-marked

case in a woman of thirty-nine in which such measures were effectual.

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GOITRE, (Operative Treatment). *Priestley Leech, M.D., F.R.C.S.*

A. Kocher, a son of the well known Kocher of Berne, publishes a paper¹ containing the results of treatment in 93 cases of *exophthalmic goitre* occurring in the Berne clinic between the years 1883 and 1899. Out of these, 74 are said to have been cases of true exophthalmic goitre, 59 of which were operated on. Kocher exercises a careful selection, and does not permit a case to be operated on during an exacerbation of the disease. All the operations were done under a 1 per cent cocaine anæsthesia. The nature of the operation varied from **Excision** of one lobe of the thyroid gland, to **Ligature** of the thyroid arteries. In three cases the arteries were tied, and at the same time the cervical sympathetic was resected. Among these 59 cases, there were four deaths within ten days of operation, from apparently well marked tetany. In 39 cases there were well marked constitutional disturbances, most of which could not be considered as merely usual after a considerable surgical operation. Many of the symptoms were clearly referable to the sympathetic system, such as tremor, palpitation and irregular cardiac action, sweating, vomiting, and in a few cases a transitory increase in the symptoms observed before operation. In all these 39 cases operation was followed by a more or less protracted elevation of temperature and by rapid heart action. This suggests that some of the symptoms of exophthalmic goitre may depend upon the circulation in the blood of a toxic substance, the presence of which is occasioned by the faulty or perverted metabolism of the thyroid gland, and that during operation an unusual amount of this is forced into the blood current. As regards results, cure resulted in 45, and improvement in 8; these results are superior to those obtained by medicinal means.

There is a class of thyroid enlargements in which the chief feature is a great increase in the size and number of the blood vessels, with a consequent increase in the size of the gland itself. This is not true exophthalmic goitre, though in many instances it bears a very close resemblance to it. In Kocher's series nine of

such cases had the thyroid arteries ligatured, with very satisfactory results. In three of the fatal cases the *post-mortem* revealed no cause of death.

REFERENCE.—¹*Mittheil. aus den Grenzbl. der Med. und Chir.* Bd. ix.

GONORRHŒA. J. W. Thomson Walker, M.B. Ed., F.R.C.S.

Bacteriology.—The gonococcus has hitherto been distinguished from other diplococci by the following three characteristics: (1) It will not grow on pure agar; (2) Upon certain media colonies are produced having characteristic appearances; (3) It is not stained by Gram's method. According to Wildbolz¹, however, the gonococcus can be grown upon agar. He has succeeded in obtaining colonies on this medium after culture of the organism upon serum agar for four or five generations, and in two examples after a single cultivation. This test, which has been relied upon to differentiate the gonococcus from the *diplococcus meningitidis intracellularis*, is therefore fallacious, the more so that the latter diplococcus is also difficult to cultivate on simple agar in the first generation.

Dr. A. von Wahl² suggests a new stain for the gonococcus, which he states is specially applicable to the discharge of chronic urethritis. The dye consists of auramine and thionin, and stains the cellular elements light green and the gonococci dark violet.

General Infection.—Dr. Harris³ furnishes a very complete report of a case of gonorrhœal endocarditis, in which cultures of the specific organism were obtained during life. At the autopsy there were vegetative endocarditis, œdema, and induration of the lungs, and infarcts in the spleen and kidneys.

Dr. Harris enters fully into the subject of the growth of the gonococcus on various media, and insists upon the use of a relatively large quantity of blood and a low dilution by the culture medium. Several factors, he says, must be taken into consideration in order to obtain a successful culture of the gonococcus. The albuminous fluid (*e.g.*, blood) must be present in abundance. Solid media are more suitable than fluid, as in these freer access to oxygen is obtained than in bouillon, where the blood soon clots and falls to the bottom.

In the cases of endocardial infection reported (including his own case) gonococci appeared in the blood drawn, upon an average, five days before death; but in one case as early as the eleventh day of the disease, and in another as late as one day before the exodus.

Markheim⁴ has collected fifty-two cases of gonorrhœal rheumatism, in three of which gonococci were found in the blood.

Philippet⁵, in an interesting paper on gonorrhœal osteopathy, distinguishes an acute and a chronic form of gonorrhœal affection of bone and periosteum. The acute form develops usually in the third or fourth week of the urethritis, and affects especially the prominent points of the skeleton. The symptoms consist in pain on pressure or movement; reddening of the skin is rarely present. Recovery usually takes place in from one to two weeks. The chronic form involves the epiphyses almost exclusively, and especially those of the small bones of the hand and foot. A swelling, which is painful at first, develops on the bone. The affection remains stationary for months or years. In the diagnosis syphilis must be excluded.

According to Adeline,⁶ Charcot was the first to record a case of gonorrhœal polyneuritis. Only a few of the many cases since published are of undoubted gonorrhœal origin.

In this form of neuritis the movements especially of the lower extremities are affected, and most markedly those of the anterior and outer aspects of the leg. The upper extremities, the body, neck, and face, are only exceptionally involved. All observers state that there is tenderness of the muscles and nerves, and hyperæsthesia of the surface. The disturbances of sensation and reflexes correspond to those in other forms of polyneuritis. Slight trophic changes are present as a rule, but severe changes are rare. The onset of the symptoms may take place between the eighth day and several weeks after infection. Lustgarten has seen polyneuritis set in seven months after the onset of gonorrhœa. The duration is prolonged, but the prognosis is usually good.

Dr. Byer of Montreal⁷ draws attention to the form of conjunctivitis which occurs as an ocular manifestation of systemic gonorrhœa. This so-called "metastatic conjunctivitis" is much more common than the inflammation of the conjunctiva due to direct inoculation, and the two conditions must be carefully distinguished. Clinically metastatic conjunctivitis affects, as a rule, both eyes, and attacks specially the fornices of the conjunctiva. There is a mucoid or at most a muco-purulent discharge, and the subjective symptoms are characteristically slight. The disease always runs a favourable course, and expends itself in a few days even without special treatment. The cornea is never affected. Relapses are prone to occur, and the condition is

commonly associated with arthritic or iritic manifestations, or may alternate with these. A period of three or four weeks usually intervenes between the infection and the onset of the conjunctivitis.

Hunner and Harris⁸ describe several cases of general peritonitis from gonorrhœal infection, and relate cases to illustrate the relative frequency and gravity of this condition in children. In diagnosis, appendicitis should always be borne in mind. The points in favour of a gonococcal infection are a history of gonorrhœa, recent or of long duration, and the discovery of the gonococcus in the secretions of the urethra, vagina, or cervix. A history of pelvic pain and tenderness, and a swelling in one or both ovarian regions, make the diagnosis probable. Diagnosis is rendered almost certain if, with these symptoms, the peritonitis occurs after the manipulation of pus tubes, during menstruation, or in the puerperium.

The symptoms of gonorrhœal peritonitis resemble those of peritonitis from other causes, but the course of the disease is characteristic. The onset is acute, and lasts two or three days, and following this the symptoms rapidly abate, leaving intra-peritoneal exudation, pelvic adhesions, or pus tubes. Operative interference, according to the experience of the writers and to that of others, is of doubtful value. **Rest, Turpentine** stupes, mild **Cathartics**, liquid diet, and stimulating treatment are recommended.

Batley⁹ has collected thirty cases of gonorrhœal pelvi-peritonitis in the male, many of which came under his personal observation. The condition has hitherto been regarded as specially affecting women. It is almost invariably secondary to gonorrhœal infection of the bladder and prostate, but more particularly of the seminal vesicles, vas deferens and epididymis. Only two cases are on record in which peritonitis followed urethritis alone. Two clinical forms are described, an acute and a sub-acute. In the acute form the general and local symptoms are severe. There is intense pain in the inguino-scrotal region, subsequently spreading to the iliac fossa. The general symptoms form a typical picture of peritonitis. The duration is usually short, and the prognosis good. The author quotes instances, however, in which the peritonitis became general, with fatal results. The sub-acute form is more frequent, and is only diagnosed by rectal palpation.

The question as to the existence of gonorrhœal exanthemata

is at the present time unsettled. Orlipski¹⁰ relates the case of a merchant who had three attacks of gonorrhœa, and on each occasion suffered from severe urticaria, which disappeared with the cessation of the discharge. No balsamics or other internal medicines were administered, and there was no gastro-intestinal disturbance. The author regards this as a case of habitual gonorrhœal urticaria.

TREATMENT.—Silver compounds have long been recognised as the most potent applications in the local treatment of certain forms of gonorrhœal urethritis. **Nitrate of Silver**, the salt most frequently used, has ever been open to the objection that a chloride of silver was formed by combination with the chlorides of the tissues, and the coating thus produced upon the surface interfered with the deeper penetration of the metal. Further, the stronger solutions of the nitrate are too irritating for practical use. Recent work in the therapy of urethritis has been directed towards the production of a silver compound which, while retaining its bactericidal powers, will be sufficiently bland for use in the urethra, while it penetrates with rapidity and certainty.

With these objects in view many new compounds of silver have been evolved in recent years. Silver has been combined with vegetable acids, such as citric acid (**Itral**) in place of mineral acids. The combination has, however, proved unstable. More successful results have been obtained from the combination of silver directly with organic bodies, such as casein (**Argonin**) and an increasing number of these bodies have appeared within the past few years.

Largin has been pronounced too irritating, and lacking in penetration. Sellenew¹¹ however reports disappearance of the discharge in acute gonorrhœa after one week, and complete cure in two or three weeks, from irrigation with largin solution of $\frac{1}{10}$ to $\frac{1}{2}$ per cent in large quantities. In chronic cases 1 to 2 per cent was injected into the bladder through a catheter. In a few cases solutions as strong as 5 per cent were injected.

An objection to the earlier organic compounds of silver has been the very small per-centage of the metal which was present. Thus **Argentamine** and **Argonin** contained but 10 per cent of silver, while largin was only slightly stronger, with 11 per cent. An endeavour has recently been made to obtain higher percentages of silver in these compounds, and **Albargin**, a combination of silver and gelatose, commented on in the last issue of the

Medical Annual, contains 15 per cent. It may be used in a solution of 1 in 500 in acute cases.

Ichthargan, (ichthyol and silver) another recent drug, contains 30 per cent of silver, and has been used in solutions of 1 in 4,000 for irrigation of the anterior urethra. Instillations of 3 per cent strength may be used for the prostatic urethra, and bougies are made to the strengths of 1 in 2,000 to 1 in 1,000. Scalfield¹² has used ichthargan in solutions of $\frac{3}{4}$ to $1\frac{1}{2}$ grain to $6\frac{1}{4}$ ounces, as an injection every three hours. In a few cases he used stronger solutions, up to 5 per cent. In gonorrhœa in the female he applied strips of gauze steeped in a 1 per cent solution. Goldberg¹³ states that cultures of gonococci are killed in one minute by 1 in 500 solution, in 5 minutes by 1 in 1000 solution, and in 20 minutes by 1 in 10,000 solutions of ichthargan. In actual practice, strong solutions such as .2 per cent cause desquamation. The astringent properties of this combination are marked. One and a half drachms of a 1 in 3,000 solution injected in an acute case of gonorrhœa, according to this author, rapidly causes the disappearance of the swelling, congestion, pain, and the discharge. In 50 per cent of his cases the illness lasted less than four weeks.

Argyrol, a combination of silver and vitellin, is the most recent addition to the series. It was introduced by Dr. Barnes of Philadelphia,¹⁴ and is produced from a proteid derived by chemical manipulation of wheat, and subsequently combined with silver. The combination contains 30 per cent of silver, and is extremely soluble, one ounce being completely dissolved in a dessert-spoonful of water. Strong solutions are therefore easily obtainable. A further and important advantage claimed for the drug is that it does not coagulate albumen or precipitate chlorides, and its action and penetrative power thus remain unhindered by the urethral secretions, or by combination with the cells of the mucous membrane. Its power of penetration, as tested by Dr. Edward Martin on thick strands of catgut, is intense and rapid.

Dr. H. M. Christian, of Philadelphia,¹⁵ investigated the clinical action of the drug, and his conclusions are as follows :

(1,) That it is absolutely free from irritating properties, solutions as high as 5 per cent causing no discomfort.

(2,) That the gonococci on and beneath the urethral mucous membrane are rapidly destroyed.

(3,) The amount of urethral discharge is in a majority of cases at once lessened in a marked degree.

(4.) The actual duration of the disease is shorter than under the use of any other silver salt. Thirty-eight cases were cured in from two to four weeks.

The following technique was adopted. During the first week injections of a 2 per cent solution with the ordinary two-drachm hand syringe were used four times daily, the solution being retained for five minutes. In the second and third week 5 per cent solutions were used ; in the fourth, fifth, and sixth weeks as high as 10 per cent solutions were employed. When the urethritis affected the whole urethra, injections were replaced by total irrigations beginning with 1 in 2,000 and increasing to 1 in 500. Deep instillations of 1, 2, and 5 per cent solutions were made in a number of cases without causing any inflammatory reaction.

Dr. Kelvin¹⁶ records his experience with this drug in 2,500 cases of acute and chronic conditions of the genito-urinary organs. In acute gonorrhœa, within the first forty-eight hours the author recommends a trial of the following abortive method. The anterior urethra is first washed with warm water from an ordinary hand syringe, and then 2 drachms of a 20 per cent solution of **Argyrol** is introduced, and retained for two minutes. The patient is carefully instructed in the technique of injection, and is given a 20 per cent solution of the drug, which he uses every three hours day and night for two or three days. The method is troublesome and expensive, but the author has seen six cases of severe acute gonorrhœa aborted by this means in from four to ten days. Even if the attempt fails, as it usually does, the method affords great comfort to the patient, and a cure is effected in a much shorter period than by other means.

In cases seen after the first forty-eight hours, 2 drachms of a 5 per cent solution of argyrol is injected three or four times daily, and retained five or ten minutes. For poorer patients lower percentages (1 to 3 per cent) of the drug are used, and a 10 to 20 per cent solution is injected by the doctor every two or three days. By following the above methods of treatment, 85 per cent of acute cases were cured in from three to six weeks. A striking feature of argyrol was its power of allaying the signs and subjective symptoms of inflammation, and the stronger the solutions employed the more pronounced were these effects.

In chronic anterior or antero-posterior urethritis, the urethra was first irrigated with a warm saturated solution of **Boracic Acid**. Every two or three days the urethra was swabbed with

20 per cent argyrol solution, and the patient was given a 5 per cent solution for injection three times daily. In chronic follicular urethritis and Cowperitis a 10 per cent solution is injected, preceded in the former condition by dilatation of the urethra. Seminal vesiculitis is treated by thorough massage through the rectum while the bladder is full. This is followed by injection of $\frac{1}{2}$ to 1 ounce of 10 to 20 per cent argyrol solution.

In cases of cystitis, after irrigation with a saturated solution of **Boracic Acid**, $\frac{1}{2}$ ounce to 1 ounce of 10 to 20 per cent argyrol solution is injected into the bladder and allowed to remain there.

In chronic posterior urethritis, Swinbourne suggested an ointment of 5 per cent argyrol in lanoline for application by means of a sound. The author recommends a 20 per cent ointment, and in addition preliminary irrigations of 1 in 1,000, followed by deep instillations of 10 per cent argyrol solution every two or three days.

Effertz¹⁷ asserts that gonococci die at a lower temperature than will destroy the mucous membrane of the urethra, and he uses **Hot Irrigations** of weak **Permanganate**, in the treatment of acute and chronic gonorrhœa. The basis on which this treatment depends is the observation that cases of chronic gonorrhœa recover during attacks of enteric fever or malaria.

Schücking¹⁸ obtained a cure in 5 cases of gonorrhœa in women, and 3 in men, by the introduction of **Electrothermic Sounds**. The sound resembled a uterine sound, and was so arranged that with a current of 6 ampères and 12 volts the sound attained a temperature of 50 to 55 C. The applications lasted from five to 15 minutes.

M. Schall¹⁹ has used **Peroxide of Hydrogen** in gonorrhœa with encouraging results. He states that recovery took place in less than a week in both acute and chronic cases. The greatest number of injections he found it necessary to give was fourteen. $\frac{1}{12}$ th strength was used for the first injection, $\frac{1}{11}$ th for the next, and so on up to the limit of tolerance of the urethra. This limit was reached generally at about 10 volumes, but in practice it was not necessary to attain this limit. The bactericidal effect was produced between 6 and 9 volumes, and this strength caused slight pain.

The most satisfactory results in the treatment of gonorrhœal vaginitis, according to the *Phil. Med. Journal*,²⁰ are obtained from the application of **Trichlor-acetic Acid** (1 to 2 per cent) and of **Methylene Blue** (1 per cent). "Painting the vagina (with

methylen blue) from the vault to the vestibule once or twice weekly has been most prompt in arresting the disease, and restoring the character of the mucous membrane."

Urethritis.—Horwitz²¹ gives the following conclusions, after an inquiry into the value of the **Irrigation Method** as a means of aborting and treating urethritis.

(1,) The irrigation method of treatment will not abort acute specific urethritis.

(2,) It will hasten the terminal stage of the disease, which is prolonged and difficult to cure.

(3,) Chronic urethritis and involvement of the deep sexual organs are common consequences.

(4,) In many instances, in order to effect a cure in the terminal stage of the disease, the irrigations must be discontinued and other methods of treatment employed.

(5,) Irrigation should not be employed in the acute stage of urethritis.

(6,) Irrigation of the deep urethra by means of hydrostatic pressure is injurious in the majority of cases of acute gonorrhœa, and is conducive to the development of complications.

(7,) Little or no progress has been made in the treatment of acute urethritis, either in aborting the disease, lessening its duration, or preventing complications.

Gonorrhœal Epididymitis.—Bocchi²² relates 10 cases of gonorrhœal epididymitis in which he used a 10 per cent solution of **Guaiaicol** in vaseline. This was smeared thickly on the scrotum once a day, covered with cotton wool, and supported by a firm suspensory bandage and a cushion. The treatment of the urethritis was meanwhile suspended, and **Salol** or **Salicylate of Soda** given internally. The analgesic effect was marked, pain being eased from the first, especially in acute cases. Complete cure was obtained in twelve or thirteen days. If the applications are made more frequently there is a risk of scrotal inflammation.

Maurange²³ recommends the following method of treatment. After shaving, the following ointment is applied in a thick layer.

R	Methyl salicylate	20 parts		Lanoline	15 parts
	Guaiaicol	2½ parts		Vaseline	25 parts

Over this a thick layer of ordinary cotton wool is applied, and the penis surrounded with it. The penis is passed through a hole in a piece of silk, and a further layer of wool applied over this round the scrotum. A double spica woollen bandage keeps the whole in place and provides pressure. The patient is allowed to

walk about. In a few hours the pain disappears, and on the fifth day the dressing is removed and the swelling has disappeared. A suspensory bandage is worn for a few days.

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GOUT.

Bertram Abrahams, M.B., B.Sc., F.R.C.P.

ETIOLOGY AND PATHOLOGY.—Allbutt¹ in a general survey states that the origin of gout is so uncertain that one cannot do more than concentrate the attention upon the fact of uratic arthritis as the keystone of the disease. He is inclined to disbelieve in a gouty eczema, holding that the form so described is largely the eczema of dryness of the skin; also in his experience there is no marked increase of arterial tension in the gouty. Fletcher² discusses the occurrence of gout in the United States on the basis of 36 cases, which in a subsequent paper³ he has extended to 42. These comprise all the patients admitted for gout into the Johns Hopkins Hospital during the past fourteen years. The apparent infrequency of gout in the United States is largely due to errors in diagnosis, many cases being classed as rheumatism. As a matter of fact he finds that on the basis of admissions to hospital, gout is about two-thirds as common in Baltimore as in London. A definite hereditary influence was only present in about 9.5 per cent of the cases, but there was almost always a personal history of alcoholism, fermented liquors being apparently more at fault than the distilled. Food has apparently very little influence in the etiology of the disease, but there was a history of exposure to the influence of lead in 19.4 per cent. All the patients were males, and the decade most affected was the fifth; the youngest patient was seventeen years of age. Almost all the cases came from the lower walks of life. Three cases were acute; of the others, nineteen showed tophi.

The kidneys were usually affected ; there was albuminuria in thirty-two, and casts were present in twenty-six patients. No uratic deposits were seen in the urine. Among the rarer complications observed were unilateral parotitis, and fatal pericarditis.

Crombie⁴ discussing gout in the tropics, says there is no question that the disease is much less frequent in India than it is in Europe among the same class of patients. He attributes this to the lower tissue metabolism which is required to raise the body temperature through a smaller number of degrees, and among natives to the less nitrogenous nature of their diet. It is noteworthy that on returning permanently to England, Europeans who have lived in India are extremely liable to gout. The dietetic habits of the Hindoos predispose them to diabetes, which may be said to replace gout among them.

Haig⁵ in a lengthy article again urges his well known views. He holds that gout and rheumatism are the same disease ; that they are not constitutional, but are due to poisoning with such articles of diet as flesh and tea ; and that they can therefore be cured by leaving off the poisonous foods, and prevented by omitting such foods from the diet of the young.

Woods Hutchinson⁶ believes that there is no connection between the production of urea and uric acid, whence the limitation of animal and nitrogenous food in gout is irrational. Uric acid is produced in health from two sources, exogenous from the nucleins and purin bases of the food, and endogenous by nuclein katabolism in the tissues. The former provides most normally, the latter is alone increased in gout and lithæmia. These diseases form a group of chronic toxæmic processes of varied origin, all of which result in the production of uric acid and urates. These bodies are in disease produced by the katabolism of body nucleins under the influence of poisons, such as alcohol and lead. Hence it is inferred that the use of lithia and other uric acid solvents is irrational. Most of the toxins of gout are, according to this author, of intestinal origin, and treatment should aim at establishing intestinal antiseptis.

Thorne⁷ agrees with Hutchinson, and considers that a pathognomonic indication of the excess of intestinal putrefaction is prolonged deficiency of pigment in the fæces. He states that the pressure of the blood rises and falls in proportion to its toxicity. Haig⁸ on the other hand opposes this view, and asserts " without fear of contradiction " that the gouty or uric

acid diathesis is a myth. Dunin⁹ also holds, though on different grounds, that there is no such thing as an arthritic or uratic diathesis in the French sense of the term. He holds it unproved that metabolism is slowed in diseases grouped under this head ; nor does the cursory examination of the urine, as in the course of practice, justify wide-reaching conclusions, and more particularly the diagnosis of arthritism, the relation of uric acid to arthritis and kidney stones being still uncertain.

West¹⁰ points out that there is not the close relationship which one would expect upon theoretical grounds between gout and uric acid gravel, or calculus. The urine may contain excess of uric acid without deposit, and may deposit much when the amount is not large. In cases of uric acid calculus and gravel, a history of previous gout is rare, and in places where stone is common, as in Scotland and in Norfolk, gout is rare ; while in India among the natives, uric acid gravel and calculus are frequent, but gout is unknown. The misleading term *gouty kidney* is often applied to a condition due to atheroma of the vessels. There is no direct relation between gout and atheroma, except that chronic gout is met with usually in elderly persons. Similar conditions of the kidney may be met with in old persons with atheromatous vessels, who have never had any manifestations of gout in their whole life. On the one hand some patients may have gout and never develop granular kidney ; on the other hand some may have granular kidney and never gout ; hence the relation, however close, is not constant or essential. The same is to be said as to the relation between lead poisoning and granular kidney ; either gout or lead may produce chronic changes in the kidney, but neither cause the granular form. But the presence of granular kidney greatly increases the liability of the patient to gout on the one hand, and lead poisoning on the other, or to both together, and in each affection alike greatly increases the gravity and risk.

Reach¹¹ has repeated the experiments of Schmoll and others, to see if the purin bases were as rapidly excreted by *gouty* as by normal subjects. He administered large quantities of food nuclein, such as the pancreas and thymus of the calf ; certain joint affections were rendered worse thereby, and thus shown to be *gouty*. The resulting increase in the excretion of uric acid was not in proportion to that in the nuclein taken in ; it is thus to be inferred that some of the exogenous purin bodies are retained in the circulation.

Soetbeer and J. Ibrahim¹² have injected uric acid subcutaneously, and have examined its effects upon the urine. They find that when administered by the mouth it does not in any way influence the excretion either of urea or of uric acid. A solution containing a mixture of **Piperazine** and uric acid was accordingly injected into the cellular tissue of the abdomen of an individual in a condition of nitrogenous equilibrium; next day the urine showed a considerable excess of uric acid, 80 per cent of that injected being then excreted, and 18 per cent more was excreted on the following day. But this was not all, for during the next three days increased excretion of uric acid continued, so that it was established that not only is injected uric acid excreted as such, but also that it exercises an irritant influence upon the tissues, causing the formation and elimination of yet more uric acid.

Walker Hall¹³ discusses metabolism in gout, and appeals for collective investigation of its principal phenomena. He states that the exogenous purins lead to excess of nuclein derivatives in the blood stream, but doubts if these have any toxic effects. He suggests that uric acid and the other purin bodies may exist in the blood stream not alone, but in combination with a complex organic body. He holds that the endogenous purins are not the causative factors in gout, but are of symptomatic importance as measures of cell destruction, and hence of tissue toxæmia. He recommends that as a preliminary to dietetic measures, estimation should be made of the amount of endogenous purins, and of the time taken to excrete the exogenous forms. One should aim at giving nitrogen in such forms as to ensure that it is not long retained.

SYMPTOMS AND DIAGNOSIS.—Apert¹⁴ in a short monograph, devotes particular attention to the symptoms of gouty predisposition in children; of these he refers particularly to the large appetite, the frequent and obstinate cutaneous lesions, and the habitual constipation. Later on they are liable to paroxysmal crises of variable nature; some are of the megrimous type, and may even give rise to a suspicion of meningitis. In other cases there is nocturnal dyspnœa, perhaps going on eventually to asthma; or the symptoms may attack the alimentary canal, showing themselves as uncontrollable vomiting coming on in paroxysms, and subsiding quite suddenly: or again there may be enterocolitis, with mucous membranous or sandy evacuations. All these phenomena manifest their origin by yielding to appropriate

treatment for gout. Apert has also some valuable remarks on the radiographic diagnosis between gout and allied diseases. Tophi throw a faint and diffuse shadow, while that of exostoses is clear and distinct. Moreover in gout the clear zone of articular cartilage persists, but disappears early in chronic rheumatism. As to abarticular forms, the author refers particularly to renal colic, myalgia, and visceral gout.

Luff,¹⁵ who considers that the primary defect in gout is faulty metabolism, both intestinal and hepatic, as a result of which auto-intoxication occurs, regards as the chief diagnostic points in chronic gout the thickening of the joints of the hands, particularly the metacarpo-phalangeal, and also the marked tendency for the gouty deposit to invade the fibrous tissues between and around the joints.

Syers¹⁶ lays particular stress in diagnosis upon the careful examination of the patient's foot, which is often affected even when the hand joints are quite supple, an important difference from arthritis deformans. He states, moreover, that it is not unusual for the dorsalis pedis artery to show prominent signs of degeneration at a period when such are not to be seen elsewhere. He believes that latent gout attacks chiefly those who possess a marked gouty inheritance; he regards the gastro-intestinal symptoms as the most important signs of this disease. He lays particular stress upon acid dyspepsia, which results from the use of most nice and pleasant foods, and is usually aggravated by smoking. It is in many cases associated with flatus and diarrhœa, the latter being particularly disquieting, as it cannot be controlled by dietetic measures. Syers, however, considers that the occurrence of diarrhœa saves the patient from joint attacks. He states that in latent gout a vegetable diet and one containing large quantities of carbohydrates cannot be tolerated by the patients. He recommends short and repeated courses of carbonated waters.

TREATMENT.—Luff¹⁷ gives a full account of his method of treatment of gout in its various forms, which he has since summarised in a clinical lecture.¹⁸ He is an advocate of treating the individual rather than the disease, since the chief factor in every case must be metabolic instability. In acute gout he uses for the relief of the pain a lotion containing **Sodium Carbonate**, **Belladonna Liniment**, and **Laudanum**, applied hot every four hours. He regards **Colchicum** as a most valuable drug in the treatment of acute gout, and for subacute attacks supervening on

chronic gout. During the acute stage he puts the patient first on a milk diet, and recommends the free drinking of water free from sodium salts; **Alcohol** is only to be given when there is a weak heart with a feeble irregular pulse. In the treatment of subacute gout he recommends that 5 to 10 grams of **Guaiaicum Resin** should be given in cachets, two or three times a day. In chronic gout he prescribes a pill containing:

R	Colchicine	gr. $\frac{1}{6}$	Extract of Gentian	gr. j
	Extract of Nux vomica	gr. $\frac{1}{4}$		

For the elimination of uric acid and other purin bodies he recommends **Potassium Salts**, especially the citrate, and warns his patients against the excessive consumption of table salt. He holds that sodium salts do not remove gouty deposits, though they may be useful as hepatic and gastro-intestinal stimulants; lithium he finds less useful, and believes also to cause cardiac depression. He believes that an occasional **Blue Pill** or dose of **Calomel** at night, followed by **Epsom** or **Carlsbad Salts** in the morning, is of great benefit in the treatment of these cases. A mixture containing **Potassium Iodide** with a few drops of **Tincture of Iodine**, relieves the chronic inflammatory thickening of the fibrous tissues, but is not a solvent for urates. In chronic cases he recommends **Massage** of the affected joints followed by galvanism, and has also seen much benefit from **Radiant Heat Baths**; the effects of the latter form of treatment persist long after it has been discontinued. In old standing cases of chronic gout he finds **Vapour Baths** more useful than the other methods. Luff also recommends **Cataphoresis**, a solution of potassium bicarbonate being employed. Gouty eczema does not according to him call for colchicum; the bowels must be kept open, alcohol prohibited, dyspepsia treated, and the patient rigidly dieted. In gouty insomnia, when associated with high arterial tension, he recommends the administration of **Mercury** followed by a saline. In the preventive treatment of gout, Luff has a very high opinion of **Guaiaicum**, and is inclined to think favourably of **Quinic Acid**. As to diet in gout, he considers that as a rule too little water is drunk, and recommends that it should be plentifully consumed. He denies that uric acid is present in meat, tea, and other foods which are asserted to contain it. He protests against the condemnation of these valuable articles of diet by people with whom they do not personally agree. He considers that the essential feature of the gouty dietary should be simplicity; meat, in moderation, should not be excluded, but

starchy food should be reduced in quantity if there is discomfort after meals. There is no reason to prohibit potatoes, nor is sugar to be forbidden unless glycosuria or eczema should be present. In some intractable cases of chronic gout with no kidney trouble or cardiac failure, but with marked dyspepsia, a diet consisting entirely of **Lean Meat** and **Hot Water** may be beneficial. Dr. Luff agrees with most authorities that a gouty subject is on the whole better without alcohol in any form; if permitted, it should be in very small quantities and only at meals. Rough cider agrees well with most gouty subjects, but bottled cider should be forbidden. As to mineral waters, their chief value consists in their fluid contents, and not in their mineral constituents; those in which sodium salts are present should not be employed where the removal of gouty deposits is the object sought. Apart from the mere nature of the water, there are great advantages to be obtained from a systematic course of spa treatment. As to climate, Luff recommends a fairly bracing air with a low relative humidity, and considers that residence by the sea is in general unsuitable.

Croftan¹⁹ attempts to establish a basis for dietetic treatment of gout upon recent researches into the pathology of the uric acid diathesis. He is an advocate of the neuro-humoral view put forward by Duckworth. He holds that the formation of uric acid in man is mainly analytical, and that its accumulation is more often due to non-destruction than to over-production, while the deposits are determined by local causes. The dietetic indications are therefore to prevent the increase of uric acid in the blood, and to promote its solubility and that of its salts. For the former purpose the intake of nucleins and purin bodies should be reduced, and the eliminatory powers of the circulation and kidneys encouraged. For the latter, substances should be given which increase the alkalinity of the blood; the utility of the so-called uric acid solvents, when introduced into the body, has not yet been determined. Turning to special articles of diet, the author commences with meat. He recommends that foods containing nuclein and extractives should be avoided; for this reason boiled meat is better than fried. The quantity of meat should be limited, but the patient must not be underfed; the use of yolk of egg is to be restricted. Milk should not be used as a sole article of diet, particularly in old people, owing to the added strain which consumption of considerable quantities of fluid throws upon the circulation; it is however a valuable

addition to the diet. Cheese increases the urinary acidity and should be excluded. Fat is usually necessary to ensure the proper nutrition of a patient who is taking increased exercise. Carbohydrates on the other hand should be restricted, and replaced by fats when there is any tendency towards over-eating. Of vegetables, the bulbous are said to be of very little use, as they consist chiefly of carbohydrates and are apt to cause dyspepsia. Salads and green vegetables are recommended, with the exception of asparagus, celery, onions, and tomatoes. As to beverages, water should be the staple, two to four pints being taken per diem, including half a pint warm before going to bed. Tea and coffee, preferably the former, are permitted in moderation, but alcohol only in very exceptional circumstances.

Duckworth²⁰ lays stress upon the treatment of the patient rather than the disease. He considers that animal food is beneficial to gouty persons if taken in moderation, and that there is no difference between red and white meats. Pickled or salted meats are inadvisable, but fish is one of the best articles of diet for the gouty, and most shell fish are quite harmless if eaten in good condition. He regards most vegetable foods as quite innocuous ; he recommends celery, but says asparagus should be taken sparingly. Tea, cocoa, and coffee are quite harmless, and sugar beneficial. Many gouty subjects are best without any wine, others are the better for a little good wine taken with one meal in the day. Most varieties of malt liquors are harmful. The general level of health should be raised by every means in our power, but at the same time there should be a daily and systematic reduction in the whole amount of food consumed; rich, seasoned, greasy and twice cooked food being especially forbidden. Much harm is done by the consumption of lemon juice for pains which are regarded as rheumatic, but are really gouty. Wine is unnecessary in young people, but in many elderly patients two to six ounces daily may be taken. The best varieties are Bordeaux, Moselle, ten-year-old champagne, not too dry, and matured port ; all must of course be of the best quality. Duckworth believes that water drinkers are apt to be large eaters, and to undo thereby the good effects of abstention from wine. The use of mineral waters as articles of diet he believes to be harmful. Two to three ounces of well-diluted spirit may be taken in place of wine.

Ransom²¹ describes the hydro-therapeutics of subacute and

chronic gout, with a special reference to the use of unmedicated baths at high temperatures.

Ortowski²² compares the value of piperazine, lysidin, uricedin, urotropin, and sodium carbonate in the uric acid diathesis. He finds that **Piperazine** in aqueous solution is a feeble solvent of uric acid at the body temperature, but when introduced into the body is more powerful, owing to the liberation of formaldehyde, the compounds of which with uric acid break down very readily. The order of solvent power when dissolved in water at the body temperature, from below upwards, is lysidin, piperazine, sodium carbonate, urotropin, and uricedin. The addition of the last four to urine does not alter the solubility of uric acid in it. The internal administration of lysidin, piperazine, sodium carbonate, and uricedin does not increase the solubility of uric acid in the urine or the amount of uric acid found therein. In birds, piperazine hinders the formation of uric acid concretions and dissolves those already existing, but does not influence concretions in the urinary passages; lysidin, uricedin, sodium carbonate, and urotropin have no action in this respect.

Huber and Lichtenstern²³ record the effects of treatment with "new sidonal" or **Quinic Anhydride**, in doses of 10 grams per diem. This produced rapid alleviation of the pain of joint swellings; in four cases the uric acid excretion was measured and found to be much diminished, while an estimation of that of hippuric acid in one case showed that it was nearly doubled. They conclude that quinic acid acts directly upon the uric acid-forming organs, diminishing the conversion of nuclein into uric acid.

Dobson²⁴ writes recommending the use of **Cider** in atonic gout. Leclerc and Porteret²⁵ have studied the action of lecithin on the excretion of urea and phosphoric acid; they find that when administered internally in therapeutic doses it is not eliminated by the urine; as the phosphates therein are not increased, they conclude therefore that the lecithin is fixed by the somatic cells.

REFERENCES.—¹*Pract.* July, 1903; ²*New York Med. Jour.* July 5, 1902; ³*Pract.* July, 1903; ⁴*Ibid.*; ⁵*Ibid.*; ⁶*Lancet*, Jan. 31, 1903; ⁷*Ibid.*, April 11, 1903; ⁸*Ibid.*, Feb. 14, 1903; ⁹*Gaz. Lekarska*, No. 43, 1900; ¹⁰*Pract.* July, 1903; ¹¹*Münch. Med. Woch.* No. 29, 1902; ¹²*Zeits. f. Physiol. Chemie*, xxxv, p. 1, 1902; ¹³*Pract.* July, 1903; ¹⁴*La Goutte et son Traitement*, Paris, Baillière, 1903; ¹⁵*Clin. Jour* Oct. 7, 1903; ¹⁶*Treatment*, May, 1903; ¹⁷*Pract.* July, 1903; ¹⁸*Clin Jour.* Oct. 14, 1903; ¹⁹*New York Med. Jour.* Nov. 1, 1902; ²⁰*Pract* July, 1903; ²¹*Amer. Med. News*, April 12, 1902; ²²*Preze. lekarski*, No. 17, 1900; ²³*Berl. klin. Woch.* 1902, No. 28; ²⁴*Lancet*, July 19, 1902; ²⁵*Lyon. Méd.* July 27, 1902.

GRAVES' DISEASE. (See "Goitre, Exophthalmic.")

HÆMATEMESIS.

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To be able certainly to recognise even the least amount of blood in vomitus or matter otherwise obtained from the stomach, and to determine positively its source and significance, is as important as it is difficult. New processes which conduce to this most useful end are therefore deserving of all possible attention. J. Boas and A. Kockmann¹ tested the stomach contents in various gastric disturbances for the presence of blood. **Weber's Test** was employed. It is performed as follows: Add to 5 c.c. of the gastric contents one-third of its volume of glacial acetic acid. Shake well and extract with ether. Add to some of this ether extract 30 drops of old turpentine oil and 10 drops of tincture of guaiacum. If blood is present, there will develop a blue colour, which becomes more marked if water and then chloroform are added and the mixture shaken.

The writers report the examination of 257 cases, dividing them into three groups.

In the first group the result was negative; this included cases of anacid, acid, and subacid gastritis, hyperacidity, and hypersecretion.

The second class included gastric ulcer, duodenal ulcer, spastic stenosis of the pylorus, benign dilatation, and duodenal stenosis. In the cases of spastic pyloric stenosis and benign dilatation, the authors found that so long as large masses of food-remnants were present, the result was more or less strongly positive. In the course of treatment, as the retention became less marked, the blood test became weaker and finally disappeared. The cause of hæmorrhage in these cases is explained by Talma's experimental work, which showed that after constricting the pylorus at those points where the most marked stress came from the stagnating stomach contents, hæmorrhages or ulcers occurred in the mucosa; and that the hæmorrhages were more marked when the animals had previously taken food.

The third group included all cases of carcinoma, and in all of these blood was found in the gastric contents. While the discovery of occult hæmorrhage from the stomach is not sufficient of itself to indicate the existence of cancer, yet the writers believe that it is a valuable sign. In spite of the absence of hydrochloric acid, when the motor power is good and blood is constantly

absent from the gastric contents, the case is, with the greatest probability, not carcinoma. The writers state that the test can be readily carried out on the fæces, when it is undesirable or impossible to examine the gastric contents.

REFERENCE.—¹*Med. Chron.*, Jan., 1903.

HÆMATURIA. *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

In a very interesting paper read before the Harveian Society Dr. Leonard Guthrie¹ has described a condition which he calls "idiopathic," or congenital, hereditary and family hæmaturia. In the family concerned two healthy parents had five children—two sons and three daughters. Of the two sons both suffered from the affection, and of the three females only one escaped. The two males died as children; the two affected females married; the elder has had several children—five girls, of whom four are affected, and two boys of whom one has escaped. The second daughter married and has had three children, two boys and a girl, who all suffer from the affection; the third daughter is unmarried and unaffected. In these cases the urine has always apparently contained traces of blood since their birth, but the hæmaturia is liable to paroxysmal exacerbations attributed to catching cold or to trifling ailments, or in some cases to articles of diet, such as black currants, asparagus, strawberries, or claret. These exacerbations last several days, but seldom more than a week, or at most a fortnight, but there is no regularity about their recurrence; extremes of hot or cold weather seem to favour them. The patients are otherwise in good health, and, except for some temporary anæmia following the paroxysms, do not seem to be the worse for them. The hæmorrhage is not associated with the presence of crystals of uric acid or oxalate of lime. None of these patients has shown any other tendency to bleed, nor has anyone suffered from purpura or Raynaud's disease. Dr. Guthrie refers to three cases of recurrent hæmaturia occurring in one family, reported by Dr. Attlee,² which appear to be of a similar nature, although there was no evidence in them that the hæmaturia had occurred from birth, and it is noteworthy that their father had died at the early age of thirty from uræmia. There can be no doubt that the blood came from the kidneys in both series of cases, as it was accompanied by blood casts. These cases appear to resemble those described by Senator under the name of renal hæmophilia (see *Medical Annual*, 1892, p. 263). The distinction must, however, be noted

that neither in the family whose history is recorded by Dr. Guthrie, nor in that given by Dr. Attlee, was there any general tendency to bleed. The hæmaturia did not seem to be in any degree dependent upon position, the exacerbations occurring as often during the night when the patients were at rest in bed, as when they were up and about. In all there was entire absence of dropsy and of cardio-vascular changes.

Mr. Leonard Gamgee³ has recorded an instructive case of hæmaturia of many years' duration due to villous papilloma of the renal pelvis, which he cured by **Nephrectomy**.

In a paper on unilateral renal hæmaturia, Prof. Eshner,⁴ of Philadelphia, has collected together a large number of cases presenting features of the same puzzling character as that with which Mr. Heaton and Mr. Gamgee had to deal. He has given abstracts and has tabulated them for convenience of study. The total number of cases analysed is 48; the sex is mentioned in 47, 31 females and 16 males, the preponderance of females being attributed to the greater frequency in that sex of nervous disorders, of displacement of the kidney, and of circulatory derangements due to tight lacing. The age is mentioned in 45 cases, the greatest frequency being from twenty to forty, during which period 60 per cent occurred; the left kidney was affected in 23 and the right in 25, showing a practical equality of the two organs. As a rule the diagnosis made was stone, growth, or tubercle. In 47 cases some operation was performed; recovery ensued in 39 cases, death in 6, and recurrence in 2. The diagnosis of the seat of the bleeding in many cases presented great difficulty, and could only be demonstrated by catheterization of the ureters or by direct inspection of the vesical orifices of the ureters after cystotomy. In 16 of the cases no lesion was discovered at the operation, but it is noteworthy that where nephrectomy was ultimately performed for persistent hæmaturia, apparently healthy kidneys invariably showed changes on microscopical examination, these changes being usually disseminated interstitial nephritis; and Prof. Eshner thinks we are justified in concluding that had all these 16 kidneys been similarly examined the number in which no lesion could be found would have been appreciably reduced. Of the other cases there was displacement or undue mobility of the kidney in 6; congestion in 3; adhesions in 2; inflammatory, degenerative, or other lesions of the kidney in 11; and alterations of the pelvis in 9. None of these lesions satisfactorily account for the occurrence

of the bleeding, as they occur commonly enough without giving rise to this result. No case appears to have been a true example of hæmophilia, nor is there any explanation of the relief afforded by exposure, manipulation, or incision of the kidney.

Prof. Eshner considers that the conclusion to be drawn from this study is that, having localised the source of the bleeding and having failed to relieve it by rest in bed, drugs, and similar medical measures, the kidney should be exposed and examined; if necessary, incision should be made, and perhaps the capsule stripped off; if unduly movable, it should be stitched in its place; if the bleeding should continue, nephrectomy must be performed. In several cases the removal of small patches of abnormal-looking tissue from the kidney has been followed by cessation of the hæmaturia, but simple incision has also been equally successful, so that it is impossible to know how much to attribute to the removal of the little patch which to the eye of the operator seemed suspicious, even although subsequent histological examination showed that it presented structural changes, as there is no evidence that these changes were limited to the particular portion excised.

REFERENCES.—¹*Lancet*, May 3, 1902; ²*St. Bart's Hosp. Jour.* Dec. 1901; ³*Lancet*, Sept. 13, 1902; ⁴*Amer. Jour. Med. Sci.* April, 1903.

HÆMOGLOBINURIA.

Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.

In a paper read at the Royal Medical and Chirurgical Society by C. W. Ensor and J. O. Wakelin Barratt¹ a case was described of hæmoglobinuria in a lunatic, following paroxysms in which he beat his forehead with the palm of his right hand. The authors suggested that the violence caused extravasation of blood in the subcutaneous tissues, where the blood corpuscles were broken up by the development of an autolysin, and that the dissolved hæmoglobin entered the blood stream and became rapidly filtered off by the kidneys. In the discussion which followed the speakers, amongst whom were Dr. Vaughan Harley and Dr. Archibald Garrod, seem to have argued for and against the probability of hæmoglobinuria being caused by injuries, apparently forgetting that this is by no means a novel suggestion. Sir William Gull long ago described the case of a young lady who fell and hurt her back on getting into a railway carriage, and shortly afterwards passed bloody urine containing only disintegrated matter. Rosenbach's case was in the first instance

caused by a fall from a waggon, and Botkin has published an example which followed a kick from a horse.

In a subsequent number of the *Lancet* a letter appeared from Dr. William Muir,² in which, after alluding to this difference amongst the speakers, he relates the case of a farmer in whom an attack of hæmoglobinuria followed an injury to the knee-joint caused by the attack of a young boar. The exact relation of the disease to injury, although well attested, is by no means clear, for in several of the published cases exposure to cold was capable of producing the attacks, at least subsequently, in the same individuals. It is not probable that the destruction of the blood corpuscles is the direct result of the local injury, and it is at least open to doubt whether extravasation of blood is necessary; it would be more in accordance with what we know of the disease to believe that the injury acts by producing shock with consequent slowing of the circulation, destruction of the blood corpuscles taking place in the distal parts of the circulation just as it does from cold.

REFERENCES.—¹*Brit. Med. Jour.* March 28, 1903; ²*Lancet*, April, 1903.

HAEMOPHILIA.

T. N. Kelynack, M.D., M.R.C.P.

Knowledge regarding the etiology and pathology of hæmophilia still lingers, and treatment consequently remains unsatisfactory. The disease is transmissible through the female line, and where hæmorrhage occurs in a hæmophilic subject the coagulability of the blood seems to diminish as the amount lost increases, but beyond these points we remain in almost complete ignorance. There certainly seems to be no recognisable change in the walls of the blood-vessels, and the blood presents no noticeable abnormality. The most important point in dealing with these cases is to ensure prophylaxis.

In the arrest of hæmorrhage in hæmophiliacs **Calcium Chloride** has been strongly advocated. It is usually given by the mouth in large doses, but has been administered as a rectal injection. T. Wilson Parry¹ has had good results from its use as a local application.

Adrenalin Chloride has also proved of benefit as a styptic when applied to the bleeding point. Strong solutions of **Perchloride of Iron** and **Tincture of Hamamelis** are still used as local applications. A. J. Ochsner² recommends the use of **Albumin** administered in the form of the white of egg. **Gelatin**

has also been given in daily doses of half an ounce. E. Fuller³ has found **Thyroid Extract** an agent of much service.

J. A. Arkwright⁴ has described a case met with in a woman where a gangrenous condition of the toes occurred, and death resulted apparently from intra-cranial hæmorrhage.

Vulliet,⁵ in a study of hæmophilic joint affections, quotes König's stages : (1) *Hæmarthrosis*, occurring without appreciable injury, with slow absorption, complete disappearance, but with repeated recurrence ; (2) *Reactionary synovitis*, characterized by changes in the synovial membranes and cartilages consisting of thickening, fibrous deposit, villous growths, and the formation of foreign bodies ; (3) *Cicatrization*, accompanied by partial or complete ankylosis, often in faulty position with contractions or dislocations. The knee-joint is most commonly affected, but though one joint suffers most, others are frequently involved, and the joint lesion may be the only conspicuous manifestation of hæmophilia. As regards treatment, **Pressure** on the immobilized joint, and **Puncture**, are advisable, but never incision. It has been suggested that trial may be made of **Gelatin Injections** into the joint.

REFERENCES.—¹*Lancet*, Feb. 21, 1903 ; ²*Med. Rec.* Nov. 1, 1902 ; ³*Med. News*, Feb. 28, 1903 ; ⁴*Lancet*, Sept. 13, 1902 ; ⁵*Rev. Méd. de la Suisse Rom.* Dec. 20, 1902.

HÆMORRHAGE, Gastric. (*See* "Hæmatemesis.")

HÆMORRHOIDS.

Robt. Hutchison, M.D.

It "is possible to live on very good terms with hæmorrhoids"¹ provided that they do not become infected (hæmorrhoidal crisis), and that they do not bleed too often. But hygienic rules must be most scrupulously observed. Frequent sitz baths must be taken. To diminish local congestion, a life of moderately active exertion must be led ; sobriety must be practised, the abuse of meat avoided, as also of spiced foods, and vegetables and fruits taken freely. The stools must be regulated, a movement as often as possible being obtained before bedtime, as the hæmorrhoids swell greatly after defæcation and become reduced during the rest at night. Drastic purgatives must never be taken ; instead, a teaspoonful of the following in water at bedtime :—

R	Calced Magnesia		Sugar of Milk	ãã 10 grms.
	Cream of Tartar			
		M.		

A teaspoonful of castor oil, taken fasting, may also be recom-

mended. Enemata are of great service. Some recommend them cold, others prefer them hot. The writer prefers them hot when there is no pain, as the decongestive action of heat is more prolonged than that which follows cold. As an astringent, a teaspoonful of alum may be added to the enema, or astringent decoctions may be used. An enema or decoction of **Rhatany Root** of a strength of 2 per cent is recommended. For those patients who demand drugs, **Hamamelis** and **Capsicum** may be recommended.

R	Fluid Ext. of Hamamelis		Watery Ext. of Capsicum
	gram 0.18		gram 0.05

M. For one pill. Three or four to be taken daily.

LOCAL TREATMENT.—*External Hæmorrhoids.*—The commonest complication of hæmorrhoids is acute inflammation of a very painful character (hæmorrhoidal crisis). To relieve the pain, a pledget of absorbent cotton soaked with a 1 per cent solution of cocaine is very good, but the relief it affords is only transitory. To obtain permanent relief it is necessary to allay the inflammation. Applications of very hot or very cold water, of **Liq. Plumbi Subacetitis**, or repeated sprayings with hot **Boric solution**, often produce the desired result in a very simple manner. During the active stages the patient must use only absorbent cotton soaked in borated lotion; the use of ordinary paper tends to increase the irritation by the small erosions it sets up, and because, lacking suppleness, it is generally painful to use. Inunctions with **Ointment of Tar** or **Poplar Ointment** should be practiced three or four times a day. The following formula is ascribed to Contaret :—

R	Poplar Ointment	30 grms.		Thebaic Extract	0.05 grms.
	Extract of Rhatany	2 grms.		Cocaine Hydrochloride	0.75 grms.

Internal Hæmorrhoids.—When the hæmorrhoids which come down during defæcation are difficult to return, the patient should lie on his side, the lowermost thigh extended, the upper one flexed, and with a compress soaked in freshly boiled water or in olive oil containing 10 per cent of gomenol, gentle taxis should be applied. Should this manœuvre fail, it may be repeated after taking a prolonged bath. For pain the following suppositories will be found very useful :—

R	Ext. of Rhatany	0.05 grms.		Cocaine Hydrochloride	0.02 grms
	Cacao Butter	4.00 grms.			

M. For one suppository.

The following is from Unna :—

R	Chrysarobin	0.40 grm.		Extract of Belladonna	0.05 grms.
	Iodoform	0.01 grm.		Cacao Butter	20.00 grms.
M. For five suppositories.					

In case of hæmorrhage, cold applications should first be tried with pure plain water, with water containing 5 per cent of alum, or a hot solution, at 48° C. (118° F.), of 4 grams (60 grains) of calcium chloride to the quart (Mathieu) ; if unsuccessful, recourse may be had to the following suppository :—

R	Antipyrine	0.30 grm.		Extract of Belladonna	0.01 grm.
	Salol	0.30 grm.		Cacao Butter and Wax	q.s.
M. For one suppository.					

The patient should also take the following mixture, a table-spoonful every hour :—

R	Calcium Chloride	4.00 grms.		Syrup	30 grms.
	Tilia Water	120 grms.			
M. ft. mist.					

REFERENCE.—¹*Jour. des Pract.* Jan. 24, 1902.

HARE-LIP.

Priestley Leech, M.D., F.R.C.S.

Dr. Fillebrown,¹ of Harvard, has used for hare-lip the M incision shown in *Figs. 12, 13*, which preserves the red border of the lip. The diagrams explain the incision. He at first used a

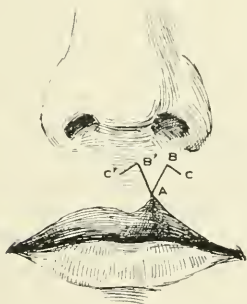


Fig. 12.



Fig. 13.

horizontal incision in the body of the lip, and drew down the lower portion, thus converting the horizontal into a vertical incision ; this proved very successful, but the extremities of the incision were rather difficult to approximate.

REFERENCE.—¹*New York Med. Jour.* Aug. 30, 1902.

HAY FEVER.*H. Lambert Lack, M.D., F.R.C.S.*

ETIOLOGY.—Professor Dunbar, Hamburg, reports that he has succeeded in isolating from the pollen of certain grasses a toxic substance, which when applied in small quantities to the eyes or nose of persons subject to hay fever, quickly produced the local symptoms characteristic of that affection; whilst, when applied to people not predisposed, no effect was produced. Further, by injecting the pollen into the circulation of various animals, he had succeeded in producing an antitoxin, which, when applied to the eyes or nose of hay fever patients, in whom the local symptoms of hay fever had been artificially produced, immediately quelled the subjective symptoms. Professor Dunbar considers the true toxic substance to be a proteid, and states that the pollen of the grasses in question has an absolutely smooth surface, and therefore cannot act by mechanically producing irritation. The observations with regard to the action of the toxic substance and of the antitoxin have been repeated by Semon,¹ who believes that the toxin is undoubtedly specific, that it produces the symptoms of hay fever only in predisposed persons, and that the antitoxin produces immediate disappearance of the subjective, and after a few minutes great amelioration of the objective symptoms. While regarding these facts as very interesting, and as possibly opening up a new era for the better understanding of this troublesome disease, Semon states that present knowledge is not sufficient to build excessive therapeutic hopes upon.

Wallis² discusses the psychical element in hay fever, and states that the influence of this factor is shown by the periodicity of the affection, its regular occurrence when expected or when dreaded, and its absence when the thoughts are otherwise fully occupied.

TREATMENT.—Lockard³ divides the treatment of hay fever into the preventive and the palliative. The preventive treatment, which is successful in 60 to 80 per cent of cases, consists in correcting all nasal deformities, and in **Cauterising** lightly those parts of the nasal mucous membrane which are known to be particularly sensitive, together with suitable constitutional treatment. The latter consists in increasing the elimination and decreasing the production of uric acid by regulating the diet, etc., by treating any existing neuroses, and removing local and constitutional abnormalities. An expected attack may sometimes be prevented by attention to various hygienic measures, and by the administration of general nerve tonics, or in highly nervous patients of sedative nerve mixtures.

For the palliative treatment he recommends **Nitro-Muriatic Acid** in five-drop doses, with local applications of **Adrenalin Chloride**. The hydrorrhœa, if it persists, may often be controlled by **Atropine**, **Caffeine**, or small doses of **Suprarenal Gland**. He observes that in the production of this disease there are three factors: a neurosis, a lesion or hyper-sensitive condition of the nasal mucous membrane, and the inhalation of pollen or certain odours. Completely remove any one of these factors, and the disease is mastered.

Payson Clark⁴ considers the following conclusions to be justified by his experience: (1) In simple vasomotor rhinitis, with no discoverable local abnormality and no general dyscrasia, **Suprarenal Extract** used locally appears to give favourable results in a large proportion of cases, either entirely preventing or much diminishing the severity of the symptoms; (2) In cases of hay fever in which there is some local abnormality in the nose, the suprarenal extract does not act favourably until such abnormal condition is remedied, and then it may be found to be unnecessary; (3) In cases in which there is a rheumatic or allied dyscrasia, the suprarenal is liable to cause some reaction at first, and in any event does not act so favourably as in uncomplicated cases.

[Wide experience, however, teaches us that the action of suprarenal gland is only temporary, that relapses under its use require larger and larger doses to overcome, and that finally the drug is ineffective, and the last state is far worse than the first.—H.L.L.]

Thost⁵ states that hay fever was brought on by grass flowers in 89 cases, pollen 61, hay 32, dust 59, smell of flowers 17, bushes, etc. 30, corn fields 32. Apart from these, dust, smoke, stone dust, bad smells, accounted for a large number of cases. As a rule, the patients belong to the upper classes, and those engaged in mental work are especially susceptible. 266 out of 400 patients had asthmatic attacks. Thost considers there is no safe cure for the disease in every case. Some were benefited by cauterising the nasal mucosa; others by the local application of narcotic compounds; others by the administration of iodine, quinine, etc. There exists only one remedy against hay fever, namely, the stay in a place without vegetation. For Germany the island of Heligoland is especially suitable.

REFERENCES.—¹*Brit. Med. Jour.* March 28 and April 18, 1903; ²*Med. Rec.* March 28, 1903; ³*New York Med. Jour.* Feb. 7, 1903; ⁴*Boston Med. and Surg. Jour.* June 19, 1902; ⁵*Lancet*, July 5, 1902.

HEADACHE.

Purves Stewart, M.A., M.D.

Headache being one of the most frequent symptoms that we are called upon to treat, we should recognise at the outset that it is comparatively seldom a disease in itself. Much more commonly it is a symptom of some other underlying morbid state. Hence in every case we should endeavour, first of all, to determine the causation.

As Leszynsky¹ reminds us, headaches may be classified into two great groups—organic and functional. The organic forms are associated with gross intra-cranial diseases, vascular, meningeal or cerebral, and with diseases of the cranial bones. Such headache, of intra-cranial origin, is often accompanied by vomiting and by optic neuritis, in addition to the focal symptoms corresponding to the site of the lesion. In those cases where coal-tar products are often unavailing to relieve pain, **Mono-bromate of Camphor**, in 3- to 5-grain doses every 3 hours, is often effectual. Moreover, as Pearce² points out, coal-tar products, even in moderate doses, may cause dangerous depression in cases of intra-cranial disease.

The functional forms of headache, on the other hand, are due to extra-cranial causes, and may be caused by various constitutional or psychical disorders, by peripheral irritants, particularly in the organs of special sense, or by variations in the cerebral circulation. Migraine is in a separate category, and is discussed elsewhere (*see* "Migraine").

By far the greatest number of cases of headache are due to *toxæmia*, resulting either from constipation or from some other variety of gastro-intestinal disorder. In such cases the headache is usually frontal, but may often be diffused over the whole head. As a rule it is not constant; it may be associated with gaseous eructations, and sometimes with drowsiness during the day, and either heavy sleep or insomnia at night. Intestinal indigestion, with or without constipation, seems to cause headache more frequently through auto-intoxication than reflexly. Gastric dyspepsia, on the other hand, though sometimes causing toxic absorption, seems more usually to produce headache by reflex irritation through the vagi. Thus headache, possibly a combination of toxic and reflex action, is a common accompaniment of dilated stomach, and is usually supra-orbital or frontal in situation.

Headache due to *renal disease* arises in one or two ways. In the first variety it is *uræmic*, due to toxæmia from insufficient

renal elimination, and may be the forerunner of a uræmic convulsion. It may or may not be associated with drowsiness, nausea or vomiting. The other variety is *congestive*, due to the cerebral vascular changes associated with general arteriosclerosis, cardiac hypertrophy, and increased arterial tension, all the result of chronic renal disease. Hence the importance of examination of the urine in cases of obscure headache.

Two kinds of headache occur in *rheumatic* patients. One is toxæmic, a diffuse headache similar to that occurring in other forms of toxæmia; the other is a muscular rheumatism or *myositis of the scalp*, chiefly situated in the occipito-frontalis and its aponeuroses. In this variety the pain is increased on pressure or on combing the hair, and upon active or passive movement of the scalp. *Gouty* subjects frequently have headache, and here again it may be either toxic or congestive, the result of vascular disease affecting the cerebral circulation. It is often associated with chronic interstitial nephritis.

In *diabetes*, headache, accompanied by hebetude and mental depression, may be a premonitory symptom of diabetic coma.

In all *fevers* headache is common, and in every case of acute headache the temperature and pulse should be carefully observed. At the onset of influenza and smallpox it is particularly acute, but it may be present in any febrile state.

Alcoholic poisoning, acute or chronic, is another common cause of headache. In some people a very small quantity of alcohol suffices to cause violent though transitory headache. In chronic alcoholism the symptom is due to a combination of several factors, toxæmia, dyspepsia, cirrhosis of kidneys and liver, with their attendant cardio-vascular phenomena. Excessive *coffee*-drinking sometimes causes a painful fulness in the head. The headache of chronic *lead* poisoning is largely a result of renal and hepatic changes.

The headache of *neurasthenia* is not generalised as a rule, but confined to the frontal or occipital region. It is usually slight in degree but almost continuous. Most cases complain not of actual pain but of various abnormal sensations such as a "constricting band," a "sense of pressure from within," a sensation of weight or numbness, etc. It is worse when the patient is tired, and improves on resting. Some cases of hysteria complain of boring pain confined to a small spot on the head—the so-called *clavus hystericus*. *Post-epileptic* headache should always be borne in mind, especially in cases that complain of

pain on awakening in the morning. The possibility of nocturnal epilepsy should be considered, and enquiries should be made as to soreness of the muscles and joints, a bitten tongue, or wetting of the bed.

Errors of refraction, particularly cases of astigmatism, may be associated with pain in any part of the head, but this headache is most frequently supra-orbital. Properly fitted glasses promptly relieve such patients. *Insufficiency of ocular muscles* may cause pain anywhere in the cranium, but it is often localised to the occipital region. This variety of headache arises as a result of repeated or continuous unconscious effort to obtain and preserve binocular single vision.

The headache associated with *nasal or pharyngeal* disease, *e.g.*, enlargement of the inferior turbinal bodies, adenoids, and nasal polypi, in all of which mouth-breathing is commonly present, is generally temporal or frontal, and disappears when the local disease is remedied.

Uterine and ovarian disease sometimes cause headache, generally a diffuse pain all over the head, accompanied at times by tenderness of the scalp. Such headache is probably referable to the neurasthenic condition so often present in pelvic troubles.

Cerebral hyperæmia may be arterial or venous. In the former, the arterial tension causes throbbing, diffuse headache, vertigo, tinnitus, *muscæ volitantes*, insomnia, mental confusion, etc., all of which are made worse by lowering the head. The face is flushed, the temporal arteries throb, and the pupils are contracted. Such cerebral hyperæmia is often due to mental overwork, emotional disturbance, alcoholism, or to sudden suppression of menstruation in plethoric women. Similar symptoms can also be artificially induced by various drugs, such as nitrite of amyl, nitroglycerin, etc. Congestive headaches are best treated by the avoidance of stimulants and psychical excitement, together with regulation of the diet, free purgation by **Calomel** and **Salines**, and the administration of **Bromide of Potassium** and **Ergot** every three or four hours. Severe cases may require local blood-letting or venesection, or cupping or blistering over the back of the neck. *Venous* cerebral congestion is due to mechanical hindrance to the return of blood from the head, *e.g.*, by growths pressing on the jugular vein, cardiac disease, or persistent cough. The pain is dull and chronic, accompanied by a sense of fulness and heaviness in the head, and is aggravated by coughing, straining at stool, stooping, or muscular effort.

Cerebral anæmia often results from chlorosis, but may also follow any severe hæmorrhage, as in gastric ulcer. The headache may be frontal, vertical, or diffused. It is dull in character, often associated with dilated pupils, attacks of syncope, tinnitus, dizziness, depression and irritability. Such patients often complain of drowsiness when sitting down during the day, with insomnia at nights. Treatment of the anæmia rapidly removes these symptoms.

TREATMENT.—Most of the modern drugs recommended for the purely symptomatic treatment of headache and neuralgia belong to the group of **Coal-Tar Derivatives**. Their name is legion, and it is often a matter of perplexity to the physician to select a suitable remedy for a particular case. Originally introduced as antipyretics, many of these aniline products were soon observed to have also marked analgesic action. Some of them, however, produce dangerous cardiac depression. Sinkler³ has published a useful paper, containing a concise, critical account of most of these drugs. The first of the coal-tar products to be employed therapeutically was **Phenazonum** or **Antipyrine**, which, originally introduced in 1884 as an antipyretic, was subsequently prescribed as an anodyne in migraine, neuralgia, etc. In 1886 **Acetanilide** or **Antifebrine** was introduced, and rapidly attained considerable popularity. Sinkler states that of the innumerable preparations which have been advertised for the relief of pain, at least nine-tenths have acetanilide for their basis and chief efficacy. This is partly due to its relative cheapness, but mainly on account of its superior therapeutic effects. But the indiscriminate use of "headache-powders" containing acetanilide is not devoid of risk. Cases of aniline poisoning, some of them fatal, have occurred. Every year new coal-tar derivatives are introduced, and for the most part, their use is chiefly confined to the relief of pain. They are of comparatively little value in pain other than that of nervous origin, and their chief scope has been found in the treatment of migraine and other "functional" forms of headache, in various neuralgias, in the lightning-pains of tabes, and in ovarian and visceral pains.

Amongst the most prominent of the aniline preparations are the following:—*Antipyrine*, *acetanilide*, *exalgin* (methyl acetanilide), *phenacetin* (para-acet-phenetidin), *thalline*, *salipyrin* (antipyrine salicylate), *phenocol*, *lactophen* (similar to phenacetin, but a lactic acid radical replaces one atom of hydrogen), *citrophen*

(also similar to phenacetin, but one atom of hydrogen is replaced by citric acid), *methyl blue*, *sulphonal*, and *trional*. The *salicylates* are also nowadays generally prepared synthetically from coal-tar, and not from oil of wintergreen.

Of all the above preparations, probably the most reliable are those first introduced, namely, **Antipyrine**, **Acetanilide**, and **Phenacetin**. The salicylates, which are excellent anodynes, have the disadvantage of tending to cause gastric disturbance. One of the recent preparations of this class—**Aspirin**—is efficacious in much smaller doses than sodium salicylate, and has distinct anodyne effects. As already mentioned, these aniline preparations are not always devoid of risk. Some patients have an idiosyncrasy against these drugs. Alarming cyanosis, sweating, and collapse may be produced, and various cutaneous eruptions, generally urticarial in type, occasionally result. To counteract the depressant action of these drugs, it is therefore customary to combine them with **Caffeine**, **Carbonate of Ammonia**, or **Monobromide of Camphor**.

REFERENCES.—¹*Med. Rec.*, Jan. 3, 1903; ²*Therap. Gaz.*, Jan., 1903; ³*Ibid.*

HEART, Diseases of. (*See also* "Aneurysm," "Angina Pectoris," "Arterio-sclerosis," "Bradycardia," "Blood Pressure," "Cyanosis," "Endocarditis (Malignant)," "Pericarditis," "Tachycardia," "Vaso-Motor Ataxy.")

Prof. A. H. Carter, M.D., F.R.C.P.

DIAGNOSIS.—*Delimitation of Heart.*—Potain¹ discusses the relative value of percussion and skiagraphy for the purpose of estimating the size of the heart. In these days of "Nauheim outlines" professing to record minute variations in the size of the heart, the testimony of some of the best clinical observers as to the difficulty and uncertainty of cardiac percussion results, is worth bearing in mind. Potain distinctly asserts that by the aid of percussion charts we cannot obtain a true outline of the heart, since we only obtain a surface projection; nor its exact dimensions, since we include the aorta, which does not belong to it. In other words percussion results, valuable as they are, have only an approximate and relative value, depending much upon the skill of the operator, and the precise methods which he employs. This is quite consistent with trustworthiness within the limits of application. Potain considers that while radioscopy affords a valuable verification of the results of percussion, there are no grounds for preferring and substituting it.

Wandering Heart.—Leusser² describes under this name those cases in which the position of the heart within the thorax is subject to abnormal variation, not due to pathological alterations in the surrounding tissues. This change of position is easily demonstrated by locating the situation of the apex beat in different postures of the body. Having determined the location of the apex beat when the patient is in the upright position, he is then placed in the horizontal position on his left side, and the change in the location of the apex beat noted. Under these conditions in normal individuals this is never moved toward the left more than 2 cm., and if this is exceeded, a diagnosis of wandering heart may be made. Out of 400 persons examined by the author, in six a wandering heart was found. Such persons usually show symptoms of palpitation, but are otherwise perfectly healthy. The name “cardioptosis” is proposed for this condition.

Reduplication of first Sound.—Phear³ in discussing the cause of this physical sign, considers that it is due to a want of synchronism in the movements by which the mitral and tricuspid valves, being thrown into tension, give rise to sound; and that it is indication of a disturbance in the relation normally existing between the intra-ventricular pressure of the left and right side respectively. It is chiefly met with in association with mitral regurgitation, arterial disease, emphysema, anæmia, and dyspepsia.

Dilatation and Hypertrophy.—Dr. Fisher⁴ records notes of various cases which in his opinion point, amongst others, to the following conclusions: (a) That dilatation of the heart, ending in death, may occasionally occur without valvular disease or general adhesion of the pericardium being present; (b) That in rare instances hypertrophy of the heart may occur under similar circumstances; (c) That there is evidence that myocarditis may exist in the absence of pericarditis; and (d) That slight weakening of the myocardium may be shown by loss of physical energy, by attacks of cardiac pain, or by tachycardia. The causation of hypertrophy and dilatation associated with rheumatic pericarditis or with general adhesion of the pericardium, is probably related to poisoning of the cardiac muscle.

With regard to the treatment of cardiac dilatation at puberty, Friedlander⁵ says in *Interstate Med. Jour.*, that the first requisite is the removal of the exciting cause, muscular overwork, and this is to be accomplished by putting the child absolutely at rest. To allow the child a “moderate amount” of exercise is hazardous, as his idea of “moderate” is certain to be the simple limit of

inclination. If the symptoms be urgent, it is best to insist upon **Rest in Bed**, with the child flat on its back, for several weeks. The diet should be light and nutritious, but should contain the minimum quantity of fluid, so that the volume of blood to be pumped can be reduced as much as possible. **Digitalis** is often of value in the beginning, and **Strychnia** at all stages, but it is more important to lessen the work of the heart than to stimulate it. Even after the child is up and about again, all severer forms of exercise must be strictly forbidden. This restriction should last for months.

Disease of Cardiac Muscle.—In a paper on this subject, Dr. Syers⁶ states that a thin-walled heart is often mistaken for fatty degeneration. The possessor of a thin-walled heart is not robust, is easily tired, and short of breath on exertion. He is morbidly sensitive to changes of temperature. His hands and feet are seldom warm, and are specially liable to chilblains. He is not as a rule capable of sustained mental effort, and is apt to become irritable when contradicted. Fainting attacks may occur, especially in the close air of over-heated rooms.

He does not attach much significance to intermission and irregularity of the pulse as a sign of fatty heart, unless accompanied by signs of ventricular dilatation. In fatty heart, over and beyond the signs of cardiac weakness, there is often great complaint of flatulent distension of the stomach and bowels, together with palpitation, which is much increased on lying down. Among other signs, he speaks of anginal attacks, which when slight, are apt to be mistaken for attacks of indigestion. He thinks that such degeneration is the usual explanation of sudden death, when it occurs in connection with aortic regurgitation. There is a special liability to complaints of abnormal sensations in the lower limbs, such as sudden sharp pain, numbness, tingling, burning, etc. Sometimes (in the aged) the first signs may be slight mental wandering and dyspnœa, with dulness or impaired resonance over the bases of the lungs, weak breathing, and moderate-sized crepitation—without any rise of temperature. Such cases are very serious, and more often terminate fatally in a few days from heart failure. In other cases there may be evidence of cerebral thrombosis. The skin in the subject of fatty heart is as a rule thin, transparent, and glossy. Also frequent sighing is a familiar sign. Dr. Syers does not believe it is possible to distinguish between the signs of fatty and fibroid hearts.

As to treatment, he disapproves of active exercises with dumb-bells or apparatus, of graduated exercises, and of warm baths, and much prefers gentle **Horse Exercise**, and steady **Walking**. Food should be moderate in quantity, and meals not too far apart. Nitrogenous is preferable to carbo-hydrate food, and but little fluid should be taken with meals. No tea or coffee after dinner, and no late suppers. Moderate supply of **Alcohol** is often desirable, but smoking is almost always injurious. Straining at stool is attended with danger, and constipation must be carefully avoided. As to drugs, **Nux Vomica** and **Strychnia** preparations are the most generally useful.

Pregnancy and Heart disease.—In an instructive paper⁷ Dr. Gibbes deals with this subject. It is too long and detailed to admit of summing up, but his views on the question of marriage in chronic heart disease may be noted. He premises the difficulty of the subject, and counsels the family practitioner to avoid committing himself to any definite opinion, and, if possible, to throw the responsibility upon a consultant. The solution turns rather upon the patient's position and circumstances in life, than upon this or that lesion. Watch the effect of exertion upon the size of the heart, the frequency and regularity of its action, and on the breathing. No form of heart disease will stand many pregnancies, especially if they occur in rapid succession. Simple uncomplicated and compensated mitral regurgitation is the least likely to give trouble. Dr. Gibbes places aortic stenosis next, and then, in order, aortic regurgitation, and mitral stenosis. But after all, the condition of the cardiac muscle is more important than the special valvular defect. Marriage should never be sanctioned if compensation has seriously failed, and great caution should be exercised even if, at the time of seeing the patient, it appears to have recovered its efficiency. A combination of aortic and mitral disease he regards as a somewhat serious contra-indication, and adherent pericardium as prohibitive.

Climacteric Disturbance of Circulation.—Dr. Steel⁸ writes of a chronic state of the circulation often met with in women about the climacteric period, simulating heart and kidney disease. The initial symptom is dyspnœa, followed later on (if not relieved by treatment) by dropsy and venous engorgement of the liver. There is as a rule neither murmur nor *bruit-de-galop*, no irregularity of cardiac action, no obvious enlargement of the heart; at most there is some accentuation of the aortic second

sound, or reduplication or lack of tone of the first sound in the mitral area. The pulse is usually slow, regular, small, and of high tension. The departure from health is not a weak heart, but increased arterial tension, against which a fairly strong heart can only contend with difficulty and effort. Ultimately positive dilatation occurs. The urine is high-coloured, concentrated, and contains a trace of albumin.

As to treatment, **Diet** is most important. The patient's indulgence in bread, potatoes, and farinaceous puddings must be checked, and an evening flesh meal be substituted for the pernicious "tea" meal, if it is the habit of the patient to take such. Breakfast is the most convenient meal for bread to be taken with, and fruit after it is often beneficial when there is a tendency to constipation; weak Chinese tea, or coffee in moderate quantity, with cream or boiled milk, and possibly an egg, making up the meal. Mid-day and evening any kind of flesh may be taken, with well-cooked green vegetables, but no bread, no potato, and no farinaceous pudding. Green vegetables afford a sort of ballast to the meal, flesh alone not being "satisfying" unless taken in large amount. With this cutting down of starchy food, the patient need not be afraid of fats, and at breakfast cream and butter and bacon fat may be taken freely, while at the later meals green vegetables will carry a very large quantity of butter. In the afternoon a cup of Chinese tea with cream, but without sugar, may be drunk, but nothing should be eaten at the same time. Malt liquors should be absolutely forbidden, and wines only cautiously employed. A small quantity of whisky, properly diluted, is to be preferred if alcohol is given. As to medicine, it is better to leave the heart alone, and aim at reducing its burden by ensuring a free action of the bowels. **Nitrites** may be of use, but their effect is transient. **Iodide of Potassium** is often useful.

Mental Symptoms of Heart disease.—Dr. Greenlees⁹ states that, assuming that heart-disease causes irritability of temper, moroseness, or suspicion in sane persons, it is likely that such mental symptoms, when prolonged, should be liable to merge into actual insanity. It is just as important to recollect that abnormal mental processes may so react upon the circulatory mechanism as to induce functional disorder or even organic disease. Thus, it is known that heart disease is relatively more frequent among the insane than the sane; that it often develops *after* admission to an asylum; and that the heart is more often found to be

hypertrophied in cases of mania than in other forms of insanity—especially if of long standing, with prolonged attacks of excitement. After recording the mental symptoms of several lunatics exhibiting various forms of cardiac disease, Dr. Greenlees states that we are hardly as yet justified in ascribing any special mental symptom, or any special group of such symptoms to particular forms of cardiac disease; but there is a general broad uniformity in the mental manifestations of cardiac cases, and he notes that while restlessness and excitement are more often associated with disease of the right heart, suspicion followed by depression and dementia are more common in disease of the left heart. He therefore maintains that heart disease should be classed among the direct causes of insanity.

Cardiac Pain.—Dr. Morrison¹⁰ contributes four lectures on this subject, which he treats in much detail. A short abstract would serve no useful purpose; but taken as a whole, the lectures will repay careful perusal. His classification of the various modes of cardiac anguish is as follows:—

Cardiac anguish (angina pectoris)	1. With pain (Heberden's disease)	1. Musculo-spasmodic.		
		2. Coronary	{ Aneurysmal Occlusive	
		3. Aortic	{ Aortitic Aneurysmal	
		4. Neuritic	{ Intra-vascular Extra-vascular	
		5. Neuralgic	{ Intrinsic Extrinsic	
		6. Endocardial (val- vular)	{ Severe { Aorto-coronary Mild { Ventricular	
		7. Vaso-motor (? peripheral)		
		8. Compound		
	11. Without pain (angina sine dolore)	1. Fear with syncopal signs		
		2. Fear without syncopal signs		
		3. Syncopal bradycardia		

Heredity as a factor in Heart disease.—Dr. Arnott¹¹ calls attention to this matter, which explains, as he thinks, the wide differences in susceptibility to cardiac inflammation in different rheumatic subjects. He holds that a predisposition to such disease may be traced to a peculiarity of development during fœtal life. He records the histories of two families in which heart disease was hereditary, and believes that patient investigation of the family histories of heart cases will find numerous

examples of the same kind. According to this view the morbid conditions under which cardiac affections occur in the course of life must be regarded, not as determining, but only as exciting causes, acting in the presence of an hereditary predisposition.

Heart affections in Childhood.—According to Dr. Leslie¹² all cardiac affections occurring under four years of age are probably congenital. In childhood, rheumatic heart inflammation is more often a *general carditis*. Though mild endocarditis may exist alone, rheumatic pericarditis is almost always associated with myo- and endo-carditis. Endocarditis of rheumatic origin is twice as common in children as in adults. It is liable to come on very insidiously, to progress slowly and steadily, and to recur frequently. The mitral valve is most frequently affected (14 to 1). Pericarditis more often comes on after one or two recurrences of endocarditis. In the fatal cases of heart disease in children, pericarditis is almost always found *post-mortem*. It is generally followed (in cases of recovery) by general pericardial adhesions. In pericarditis, and to a less extent in endocarditis, there is always more or less myocarditis; and, not infrequently, all three occur together. The interstitial tissue is mainly affected, and is apt to lead to some fibrosis, with degeneration of intervening muscular fibres.

As regards the clinical results of these morbid processes in children, the most characteristic features are: (1) More rapid occurrence of hypertrophy and dilatation than in adults; (2) A marked tendency to emaciation and anæmia, which may at first be the only manifestation of the cardiac trouble, especially in mitral stenosis in girls; (3) Frequent absence of general dropsy and hepatic enlargement, even in severe cases, with extreme distress and dyspnoea; and (4) The frequent presence of great cardiac enlargement, and even a pulsating liver, yet without ascites or œdema. In short, the symptoms of heart disease in children are apt to be obscure, and more indirect than in adults. Apart from cases of simple, uncomplicated mitral regurgitation (where the prognosis is very favourable) the prognosis of heart lesions in children is unsatisfactory, because of the greater tendency to dilatation, to recurrence of rheumatic manifestations, and to pericardial adhesion, than in adults. The existence of associated rheumatic nodules is always of serious significance.

The most important points in treatment are early recognition of the condition to be treated: warm underclothing, avoidance of damp, cold soils, protection against nervous shock, excitement,

or over-strain, and the importance of complete and protracted **Rest** until compensation is satisfactorily established.

PROGNOSIS.—In a lecture on this topic Dr. Pye-Smith¹³ points out the importance of distinguishing functional from organic murmurs. Admitting that the difficulty in some cases is very great, he remarks that diastolic or pre-systolic murmurs, systolic murmurs of maximum intensity at the apex conducted distinctly into the axilla and round to the angle of the left scapula, and murmurs of doubtful occurrence in the erect posture but distinct when lying down, are always organic. In dealing with an individual case, many circumstances other than nature and site of the lesion claim consideration for purposes of prognosis. One of these is the cause of the valvular flaw. A definite history of rheumatism, and a long interval of immunity from trouble since the incidence of such a cause (other things being equal) and evidence of good compensation, improve the prognosis. While hypertrophy is an essential feature of good compensation, it must be remembered that its amount is directly proportionate to the amount of valvular defect, and the greater the hypertrophy, the greater the strain, and the greater liability to exhaustion of the heart's capacity for work.

As regards the liability to sudden death, aortic regurgitation is the most serious lesion, and more so (in the event of excessive stress) when there is efficient compensation, than when compensation is beginning to fail. Hæmoptysis as a symptom of heart disease is not a ground for alarm. In non-valvular disease, obesity of the heart is attended with danger of sudden death; but he considers that the danger of fatty degeneration is apt to be exaggerated. Fibrous degeneration of the heart, on the other hand, carries in his opinion a definite risk of sudden and fatal syncope.

Dr. Pye-Smith concluded his lecture by relating seven case-records to show (1) That organic heart disease is, if proper precautions are observed, often compatible with a prolonged and useful life; (2) That treatment, as above described, may successfully—and sometimes on repeated occasions in the same patient—restore the efficiency of the circulation even when the symptoms are unpromising; and (3) That this applies to extreme dropsy from chronic mitral disease, to long standing aortic imperfection in old as well as in young patients, in cases of atheromatous as well as in those of rheumatic origin, and even in some few cases of septic endocarditis.

TREATMENT.—Digitalis and Aconite.—Dr. Hare¹⁴ protests against the routine employment of cardiac remedies. He thinks too much attention is paid to the valvular lesion, and not enough to the cardiac muscle, pulse tension, the condition of the arterial walls, and the quantity and composition of the urine. **Digitalis** is often given in too large doses, and continued too long. Full doses may be required at the outset, but as soon as its effects become manifest, the dose should be greatly reduced. Excellent results can often be produced by even one or two minims of an active tincture three or four times a day, combined with adequate rest. Again, a certain number of cases of valvular disease characterized by tumultuous action do better on **Aconite** than **digitalis** in any form; and Dr. Hare refers to cases of men of good muscular development who have overstrained their hearts, in which well balanced doses of **Digitalis** and **Aconite** have been more beneficial than either drug given alone.

Dr. Porter¹⁵ also, in a paper on the same subject, says **digitalis** is of service only for a few days at a time, at the longest. It should only be given to influence the heart and circulation when the arteries are very much relaxed, and the pulmonary or systemic veins overfilled with blood. In such instances as these it will tighten up the vessels, and, by augmenting the power of the systole, will force a larger volume of blood into the arterial system. In this manner the surplus of blood can be pumped, as it were, from the venous system into the arterial. This accomplished, the **digitalis** should at once be stopped, and more reliable remedies used to maintain the heart and circulation. To use **digitalis** outside of these narrow confines, when there are so many other safer and more reliable remedies, is, to say the least, extremely poor therapeutics.

Strychnine.—Dr. Curtin¹⁶ joins issue with those who use this drug for heart weakness in a somewhat indiscriminate fashion, and in large doses. He points out that the drug owes its usefulness to its properties: (1) Of vaso-motor stimulation, with rise of blood pressure; and (2) Of probably stimulating the heart muscle directly, and also its peripheral inhibitory apparatus. But in large or long continued dosage it produces exactly opposite effects, by inducing exhaustion. To tide over an emergency of rapid heart failure, such as sometimes occurs in acute infectious diseases, or to meet the effects of shock, it is of great value; but as a persistent stimulant (except in the smallest doses) it defeats the very object for which it is used. There is no doubt

that strychnine is too often used in a routine fashion, and most unwisely.

Baths and Exercises.—Medical opinion is evidently becoming more rational and less exuberant as regards the range of application of Nauheim methods of treatment. Even Dr. Thorne, who was so prominently concerned in introducing them to the medical profession in this country, now writes¹⁷ that "The Nauheim treatment when administered in England has in some ways to be modified and adapted to the climate. Many medical men who have given it what they believe to be a fair trial have prescribed the comparatively long and frequent baths and the frequent resistance exercises that often produce good results at Nauheim, but, according to my experience in London, only benefit a small minority of mild cases of heart disease, and do definite harm to the more serious cases." He then proceeds to give a detailed account of the procedure he recommends for adoption in this country.

Dr. Neville Wood in a paper dealing with the same subject¹⁸ sums up as follows : The cases in which most benefit was derived were those of moderate dilatation, accompanied, and in great part caused by general malnutrition. Cases presenting minor degrees of arterio-sclerosis might be accepted for treatment. Supposed cardiac neuroses, such as tachycardia and arrhythmia, often did well. There were many failures among elderly persons. Cases in which the imagination alone was at fault should not be treated, as they certainly detracted from the reputation of the method. As to whether treatment was most satisfactory at home, or abroad, the advantages of the climate of Bad-Nauheim, the experience of the local physicians, and the current enthusiasm, were counterbalanced by the shortness of the season, the poorness of the meat, and the usual foreign habits.

In the discussion which followed, several speakers expressed their approval of the limitations imposed by Dr. Wood upon this method of treatment.

Dr. Schaedel¹⁹ reports upon the use of **Chloride of Barium**, and reports cases in which it had been of great benefit. The dose given was .01 to .025 gm., and even .08 gm. After a dose of .01 gm. no change was noted. The drug was always taken as a powder, with sugar of milk, twice a day, two hours after food, and the effects noted two hours later. When the dose was .02 gm. the blood pressure was considerably increased, and the pulse slowed. A similar effect was produced by .05 gm. There

were no other after-effects. He believes that we have in chloride of barium a remedy which is often preferable to digitalis.

Zelenski²⁰ has further studied the action of **Cactus Grandiflorus**. He used the fluid extract, in at least thirty-drop doses, three times a day. In this dose there is no intolerance by the stomach, the appetite remains undisturbed, and no cumulative effects were noted. The pulse and respiration are not obviously modified, but the amount of urine excreted was markedly increased. The best results were obtained in the relief of arrhythmia and dyspnoea, and dropsy associated with aortic disease. In mitral troubles the benefits were less clear. In pleural exudations accompanied by cardiac debility the drug appears to be clearly indicated.

Resuscitation of the Heart's Action.—Kouliabks²¹ reports experiments by which he was able to restore the rhythmical beat in hearts which had been removed from warm-blooded animals four days previously, by maintaining **Artificial Coronary Circulation** with the following fluid slightly warmed : calcium chloride, potassium chloride, sodium carbonate, each .02 per cent ; sodium chloride, .9 per cent ; dextrose .1 per cent. He records a case of a three months old child who had died from pneumonia, the heart of which was taken to the laboratory without any special precautions on the second day after death, and artificial circulation was then carried out. For about twenty minutes the heart remained flabby, then contractions of the auricles began, at first feeble and irregular, and afterwards more strongly. Then the right ventricle contracted, and finally the whole heart began to beat, and continued so for over an hour. Such results are extremely interesting, but their practical significance cannot yet be estimated.

REFERENCES.—¹*Med. Press*, July 23, 1902 ; ²*Med. Rec.* July 26, 1902 ; ³*Brit. Med. Jour.* Nov. 15, 1902 ; ⁴*Lancet*, June 7, 1902 ; ⁵*Med. Rec.* Jan. 3, 1903 ; ⁶*Treatment*, June, 1902 ; ⁷*Clin. Jour.* Jan. 7, 14 & 21, 1903 ; ⁸*Med. Chron.* Dec. 1902 ; ⁹*Cal. Med. Jour.* ; ¹⁰*Lancet*, Nov. 1, 8, 15 & 26, 1902 ; ¹¹*Rif. Med.* Nov. 20, 1903 ; ¹²*Cal. Med. Jour.* April, 1903 ; ¹³*Polycl.* Dec. 1902 ; ¹⁴*Therap. Gaz.* Aug. 1902 ; ¹⁵*Med. News*, May 3, 1902 ; ¹⁶*Therap. Gaz.* Nov. 1902 ; ¹⁷*Lancet*, March 21, 1903 ; ¹⁸*Brit. Med. Jour.* Feb. 7, 1903 ; ¹⁹*Med. Press*, March 18, 1902 ; ²⁰*New York Med. Jour.* Sept. 13, 1902 ; ²¹*Med. Rec.* Nov. 8, 1902.

HEART, (Surgery of).

Priestley Leech, M.D., F.R.C.S.

An example of the tolerance of the heart for foreign bodies was recently seen in the Paris hospitals. A young man¹ had

attempted suicide by means of a pistol. The bullet penetrated the thorax, and the patient was admitted in a state of profound collapse, with symptoms of effusion into the pericardium. He improved and was allowed to go home, when symptoms of cardiac irritation appeared. (Some abnormal sounds were present when he left the hospital, but their precise origin could not be determined.) He was again admitted, and the X-rays showed the bullet lying loose in the ventricle. His only chance seemed to be to lie in the recumbent position until the bullet should become encysted, a process which required several months. He was recently discharged in good health, and able to follow his employment.

Fischer² reports the case of a portion of a darning needle 1.17 inches long which had been fixed in the wall of the right ventricle for some time, and which would appear to have been swallowed some time before.

Wounds of the Heart.—There has been a fair amount of literature on this subject during the year. Merrill Ricketts,³ of Cincinnati, has made experiments on twenty-five dogs, penetrating and non-penetrating wounds of the heart being made, and closed with sutures of different material. Interrupted silk sutures were found to be best. No special aseptic precautions were taken, as all usual pathological conditions were desired. It was found that the pericardium could be entirely removed without causing death, and either of the coronary arteries could be ligatured at its base without death resulting. In some cases it is better to suture the pericardium to the chest wall in order that drainage may be perfect. To suture during systole is best; the auricular wall, though thinner than the ventricular one, may be sutured with equal success. He thinks the application of surgical principles in certain cases of aneurysm of the heart will in the near future be accomplished by suture, electrolysis, or injection of gelatin. Tumours of a pedunculated character on the external surface of the heart can and should be removed. Pedunculated tumours within the cardiac chambers can also be successfully removed. Parasitic cysts should also be incised and drained.

Hammond⁴ reports a case of bullet wound of the thorax involving the heart, where there were no symptoms pointing to this condition, but where the patient on the fourteenth day died suddenly, and *post-mortem* a wound was found passing through the apex of the heart. In any case where a cardiac

wound may be present the patient, even if apparently well, should be kept at rest.

Tuffier,⁵ at the French Surgical Congress, read a paper on wounds of the heart and pericardium. He divided them into three classes: (a) The pericardium and heart are both involved; (b) The heart alone is involved, leaving the pericardium intact; (c) The pericardium alone is wounded. The method of opening the thoracic wall varied with the operator, but he gave the preference to an osteo-musculo-cutaneous flap. With regard to foreign bodies, the general belief is that needles are harmless, but Loison collected 23 cases, of which 14 terminated fatally, a mortality of 60·8 per cent. The gravity of these accidents arises from the fact that the eye of the needle remains in the thoracic wall with the point directed towards the heart, which point from its mobility produces lesions in every direction. Such an accident should be attended to immediately, and if the needle has gone out of sight, it is better to open the wall than to endeavour to reach it by an incision over the point of penetration. The X-rays are of the greatest utility in these cases.

Dr. L. L. Hill⁶ reports a case of successful suturing of knife wound of the left ventricle in a negro boy thirteen years of age. He also gives a table of thirty-seven other cases of suture of heart wounds by different operations. His conclusions are as follows:—

(a) Every wound of the heart should be operated on immediately; the operation reduces the mortality from 90 to 63 per cent.

(b) When the locality of the external wound and the attending symptoms cause suspicion of a wound of the heart, the surgeon should determine the nature of the injury by an exploratory operation.

(c) Unless the patient is unconscious, an anæsthetic should be given, preferably chloroform. Struggling is likely to produce detachment of a clot and renew the hæmorrhage.

(d) Never probe the wound, as serious injury may be inflicted on the pericardium.

(e) Rotter's operation is best and gives the best access.

(f) Steady the heart before attempting to suture it, either by carrying the hand underneath it and lifting it up, or, if the wound in the heart is big enough, introduce the little finger (Parrozzani), which will serve the double purpose of stopping the bleeding and facilitating the passage of the stitches.

(g) Use interrupted catgut sutures, introduced and tied during

diastole ; they should not involve the endocardium ; and pass as few as possible commensurate with safety against leakage.

(h) Sponge pericardium out, and don't pour fluid into the sac.

(i) The greatest cleanliness must be exercised.

(j) Close the wound in the pericardium, and should symptoms of compression arise, re-open and drain.

The author, unfortunately, does not give any analysis of the cases. Since his paper we have been able to find records of other four cases, which brings the number up to 43. These are, one reported by P. Milesi, one by Recori,⁷ and two by Dr. Errilo Giordano.⁸ The results are as follows : Out of 43 cases, 28 died and 15 recovered, a mortality of 65 per cent. Sepsis accounted for a good many, and some eight cases either died on the table or immediately afterwards. The table is not full enough to work out statistics as to the causes and time of death, but Sherman,⁹ who had collected 34 cases (which are included in Hill's table), says 5 died on the operating table, and 10 died very soon afterwards, either from hæmorrhage or the shock of the operation. Thus out of 34 cases, 15 had no chance of recovery, and out of the 19 that had such an expectation, in 13 that expectation was realized ; of the 6 who died the cause was sepsis, and out of the 13 who recovered 4 did so in spite of a concurrent infection. In some both the pleura and pericardium were drained, and in other cases the wounds were closed without drainage.

REFERENCES.—¹*Med. Press*, April 15, 1903 ; ²*Deut. Med. Woch.* Aug. 28, 1902 ; ³*Ann. Surg.* Nov. 1902, also *Brit. Med. Jour.* March 28, 1903 ; ⁴*Ann. Surg.* 1902 ; ⁵*Med. Press*, Oct. 29, 1902 ; ⁶*Med. Rec.* Nov. 1902 ; ⁷*Il Policl. Sezione Pratica*, Feb. 14, 1903, *Brit. Med. Jour.* March 28, 1903 ; ⁸*Gaz. deg. Osped.* Jan. 11, 1903 ; ⁹*Lancet*, July 26, 1902.

HERNIA.

A. W. Mayo Robson, F.R.C.S.

Much time used to be spent and great expense incurred, both by patients and hospitals, in the fitting of trusses to enable those crippled by rupture to go about with any degree of safety or comfort, and many of those patients ultimately lost their lives through strangulated hernia, the operation for which at one time, as shown by Mr. Barker,¹ had the huge mortality of 53·1 per cent, and even yet, according to that surgeon, has in hospital practice the high rate of 22·2 per cent. My own experience does not bear out this high mortality, though I find it, as one would expect, to vary in hospital and in private patients.

Taking all my cases of strangulated hernia from 1880 to 1903, both in hospital and in private patients, the mortality has been 13.5 per cent, but while the private cases, for the most part operated on without loss of time, show only a mortality of 5 per cent since 1890, the hospital cases, seen at a later stage, show the all-round mortality of 14.2 per cent, and I thoroughly agree with Mr. Barker² that cases seen when the bowel has become seriously changed, will stand a much better chance of recovery if the damaged gut is removed by a free enterectomy of the proximal end.

Mr. Makins³ advocates invagination of the gut where its condition is doubtful, and this treatment was supported by Mr. Bowlby and Mr. Watson Cheyne. Where the drainage to the bowel is limited in extent, it is worth bearing in mind.

What we want, however, to impress on the public, is to have the **Radical Cure** performed early, when it is practically devoid of risk, as shown by the following statistics. In the Johns Hopkins Hospital there was only one death in 459 operations; in Carle's clinic, in Rome, 2 deaths in 1400 operations; in the Vienna clinic, 3 in 804; and in Dr. W. B. Coley's 1075 cases, only 2 deaths; all of which massed together give a mortality of about one-fifth per cent.⁴ Of 917 Bassini's operations only 1 per cent of cases relapsed. Patients well one year after operation may be expected to remain well, and after two years they may be considered permanently cured, as the relapses usually occur within six months.

Dr. Lyle⁵ strongly advocates the use of cocaine anaesthesia in the operation for radical cure. We have found this of great service in old and broken-down subjects, but prefer general anaesthesia in the young and healthy.

Where the radical cure has not been done, and strangulation unfortunately occurs, it ought to be more fully grasped that no time should be lost in taxis, but that **Operation** should be performed without delay, when it can be done with a risk of not more than 5 per cent, and radical cure can at the same time be performed.

Interstitial Hernia.—Undoubtedly the most complete and comprehensive article on interstitial hernia, as a whole, has been written by Goebel,⁶ but an interesting paper has been contributed by A. V. Moschowitz.⁷

Dr. Crawford Renton⁸ has drawn attention to the value of Roux's operation for the radical cure of femoral hernia, which

consists in fixing a metal staple obliquely through Poupart's ligament over the crural canal, taking care to avoid the femoral vein, and then gently hammering it into the pubis. This is done after the neck of the sac has been ligatured and cut off. He reports ten cases, and says that he is perfectly satisfied with the method.

I have recently adopted what I believe to be a new method for the radical cure of femoral hernia. It is very readily employed where the abdomen is opened for some other cause. It consists in making an incision through the outer border of the rectus sheath, the muscle being drawn inward, when the posterior part of the sheath is divided over a director. The peritoneum is then reflected upwards without being opened, the sac of the hernia is drawn out of the crural canal, and ligatured off, Poupart's ligament being then stitched down to the periosteum of the pubis, thus effectually closing the entrance to the crural canal. This is much easier done than the description would appear to indicate, and in the case in which I did it, it answered perfectly well, and effected a thorough radical cure.

Mr. Peyton Beale⁹ has suggested a most useful dressing for hernial wounds, which is specially valuable in the case of children. He employs a piece of **Velvрил Film** large enough to overlap all round by about an inch. Velvрил only dissolves in acetone, and the wound and the skin round it are painted with this solution, after which the velvрил film, previously sterilised by immersion in boiling water, is placed in position and covered with a large pad of sterile wool, over which a bandage is firmly applied. The wound is then covered with an impervious dressing that is unlikely to be soiled by urine or disturbance of the superficial dressings.

Dr. Willy Meyer,¹⁰ of New York, speaks well of the implantation of silver filigree with the closure of large hernial apertures. Witzel, of Bonn, published in 1900 his method¹¹ for the closure of abdominal wounds and hernia apertures by means of buried silver-wire netting, and Goepel at the same time published the use of silver-wire netting as a means of closing hernial apertures. This new style of heteroplasty deserves careful consideration in cases that cannot be met by ordinary means. (*See also* "Abdominal Surgery," p. 96.)

Umbilical Hernia.—Dr. W. J. Mayo¹² has published another series of cases which amply prove the great advantages obtained by his vertical overlapping operation for radical cure of umbilical

hernia, a method which we have employed and can speak most highly of.

REFERENCES.—¹*Lancet*, May 30, 1903; ²*Ibid*, June 6, 1903; ³*Brit. Med. Jour.*, April 4, 1903; ⁴*Ann. Surg.*, June, 1903; ⁵*New York Med. Jour.*, May 30, 1903; ⁶*Deut. Zeits. f. Chir.*, vol lvi, p. 1; ⁷*Med. Rec.*, Jan. 10, 1903; ⁸*Brit. Med. Jour.*, Dec. 27, 1903; ⁹*Med. Press*, March 4, 1903; ¹⁰*Ann. Surg.*, Nov., 1902; ¹¹*Centr. f. Chir.*, 1900, pp. 257, 457, and 1149; ¹²*Jour. Amer. Med. Assoc.*, July 25, 1903.

HERPES ZOSTER.

Norman Walker, M.D.

Hall¹ reports a case of herpes of the left upper division of the fifth nerve, with ocular paralysis, in a patient suffering from diabetes. The actual eruption was not seen, but the history was pronounced, and the scarring very evident. On the right side there was partial paralysis of the third nerve, and iritis, but no herpes.

Stanley Barnes² records a case of herpes over the area supplied by the right third and fourth cervical nerves, with facial paralysis of the same side.

REFERENCES.—¹*Brit. Jour. of Derm.* Sept. 1903; ²*Lancet*, Nov. 1, 1902.

HYPERPYREXIA. (See also "Temperature.")

Robt. Hutchison, M.D.

Under the heading of thermic fever, Lewis and Packard¹ report observations based on 92 cases treated in hospital at Philadelphia during the extreme heat of July, 1901.

All the cases with a temperature lower than 106° F. recovered, and all over 111° F. died, the total mortality being 14.4 per cent. Tonic convulsions and retraction of the head were noted in several cases, especially in those whose temperature reached 106° F. or more, while others did not develop convulsions until the temperature had been reduced. Marked cerebral excitement followed reduction of temperature in a few cases, but those patients with high fever were generally unconscious on admission. In five out of six cases examined there was complete absence of knee-jerks persisting for some time. The urine generally contained albumin in the severer cases, sugar being noted in two, though probably in one this was due to associated diabetes. Previous alcoholic history exercised an unfavourable influence upon the severity and prognosis of the cases.

In mild cases (100° to 102° F.) rest in a cool ward, application of an ice-cap, and an occasional cool bath, with administration

of aromatic **Spirit of Ammonia** or **Alcohol of Strychnine**, will suffice. In the more severe cases (102° to 106° F.), in addition to the above treatment, a cold bath or even a rubbing down with ice may be required, while the severest cases should be treated, if possible, in an open tent covered with a fly constantly kept moist externally, the air internally being kept cool by electric fans. Rubbing with larger pieces of ice was found to be more rapid and beneficial in its action than either cold baths or spraying with cold water. Bleeding as a routine measure is condemned, and is only of benefit in very severe cases irresponsive to other remedies. Intravenous injection of **Normal Saline Solution** was found to be better than hypodermoclysis, on account of the greater rapidity with which the blood was affected.

Achard² reports a case of hyperpyrexia in a patient who had no pathological symptoms other than slight bronchial râles. The axillary temperature was 108.6° F., and in the evening of the same day 111° ; next day it reached 110.5° , but gradually fell, and in twenty-four hours became normal without any untoward symptom. He observes that we have become so accustomed to associate high temperatures with organic changes, to measure the severity of the case by the thermometer, and to base the prognosis on its rise and fall, that cases which emphasise the unwisdom of being guided by any one symptom or group of symptoms, to the exclusion of the consideration of general symptoms of the case and the power of endurance of the patient, are likely to convey a much-needed lesson.

Lord³ records two cases of hyperpyrexia in which the temperature was due apparently to attacks of influenza and liver abscess; the recorded fever was 111.5° and 110° respectively. Both recovered after the prompt abstraction of heat by an ice-pack or cold bath, and the exhibition of stimulants. Of the latter measures, the author lays stress on the excellent effect of subcutaneous injection of **Normal Saline Solution**, a pint of which with half an ounce of brandy proved most efficient in his cases.

REFERENCES.—¹*Amer. Jour. of Med. Sci.* Sept. 1902; *Brit. Med. Jour.* Nov. 8, 1902; ²*Med. Press*, Sept. 3, 1902; ³*Brit. Med. Jour.* Nov. 15, 1902;

IMPETIGO CONTAGIOSA.

Norman Walker, M.D.

Engman¹ recommends that crusts should be removed by **Boric Acid**, 15 grains to cold cream 1 ounce. This often applied softens the crusts, but no energetic measures should be used; then, after the face is gently washed with soap and warm water,

and thoroughly dried, the following lotion is applied by means of a cloth :—

R Precipitated Sulphur	Potassium Sulphide	āā 5j
Zinc Oxide	Rose-water	5iij

Sig. Shake and apply as directed.

REFERENCE.—¹*Med. Bull. Wash. Univ.* April, 1902.

INCONTINENCE OF URINE IN CHILDREN. (See "Enuresis".)

INFANT FEEDING.

G. F. Still, M.D.

The impetus to more careful study of this subject has come chiefly from America, and no small credit is due to Professor Rotch, who has emphasized so strongly the necessity for greater exactness in the feeding of infants. Describing at length the methods adopted in America,¹ he condemned the use of patent foods in terms which may well be repeated here : "The educated physician," he said, "has placed himself in a position to be dictated to not only by the ignorant nurse, but by the capitalist, who, knowing nothing of the physiology and anatomy of infants or their diseases, dictates what food shall be used, and the dictation is accepted apparently from laziness as well as ignorance on the part of the physician." The ideal to be aimed at is to adapt cow's milk (where human milk is unattainable) to the needs of the individual infant, and this can best be done by prescribing the constituents of milk-mixtures in exact percentages. These constituents are for practical purposes caseinogen, lactalbumin (or whey-proteid), fat, and sugar; and it is possible to regulate the two proteids independently by diluting milk or cream with whey. The advantages of having such modification carried out in scientifically managed dairies is obvious; the great objection is the expense. *Home-modification*, however, can be carried out on the same lines if cream containing a known percentage of fat is available. The following table will show how this may be obtained approximately by allowing one quart of whole milk, of 4 per cent fat, to stand for a known time, and then taking off the upper portion, which contains :—

Cream	10 per cent	in the upper	8oz.	after 6 hours
"	10 per cent	" "	11oz.	" 8 to 12 hours
"	12 per cent	" "	8oz.	" 8 hours
"	16 per cent	" "	6oz.	" 8 hours
"	20 per cent	" "	4oz.	" 4 to 6 hours

By using whey as a diluent, to replace boiled water partly or entirely in the modification of milk, the percentage of whey-

proteid can be regulated, the proportion of such proteid present in whey being about 1 per cent. The caseinogen in milk is about 2.8 per cent, and by simple dilution this percentage can of course be reduced as may be necessary. The proportion of lactose can also be regulated if it be remembered that one level tablespoonful of milk-sugar in a 20-oz. mixture gives 2 per cent of sugar.

Whey-Cream Mixtures are not only valuable in enabling us to regulate the amount of whey-proteid, but also in giving a curd which is finer even than that yielded by barley-water mixtures. There is no difficulty in the preparation of the whey ; it may be made from skimmed milk ; the rennet ferment should be destroyed by heating the whey to a temperature not above 160° and not lower than 155°. Some care is necessary in ensuring this temperature, as excess of a few degrees over 160° causes coagulation of the lactalbumin in the whey, and so diminishes its value. As to the proportions to be aimed at, experience shows that very young infants generally do best with a low total proteid, for instance, .75 per cent, consisting of .5 per cent whey-proteid and .25 per cent caseinogen. Fat should rarely be given in greater proportion than 5 per cent.

In order to neutralize the acidity of cow's milk the addition of **Lime-water** is necessary, and the proportion in which it must be added has been ascertained by experiment ; 25 per cent of lime-water rendered a milk-mixture strongly alkaline; 12.5 per cent of lime-water also gave a high degree of alkalinity; but 6.25 per cent of lime-water made the mixture slightly but distinctly alkaline, the condition which obtains in human milk. Where milk is collected carefully and is not so stale as the ordinary milk of commerce, a smaller proportion of lime-water is necessary ; the mixtures prepared in milk laboratories commonly require only about 5 per cent of added lime-water.

On the important question, *should milk be boiled* or not for infants, Rotch says that while heating to 212° F. does not seem to injure the milk or to alter its digestibility, a temperature of 155° F. is sufficient to kill practically all pathogenic micro-organisms which are found in milk, and also to destroy the rennet ferment, without coagulating the lactalbumin or altering the taste or appearance of the milk, and is therefore generally useful. He does not believe that scurvy is produced by the mere boiling of milk, but that " it may be produced by feeding with boiled stale milk of a faulty modification." Ransom,²

of Nottingham, has expressed almost exactly the same opinion, but weighty evidence on the other side comes from J. A. Coutts,³ who confirms an observation made by F. J. Smith, that babies "are made peevish, fretful, and even seriously ill by the pernicious effects of boiled milk on their nutrition," and considers that slighter degrees of scurvy are sometimes due solely to the use of boiled milk.

That there are many changes in milk as the result of heating it to 212° F. is conceded by all, but what the exact nature of some of these may be is still uncertain. C. W. M. Brown⁴ has collected the results obtained by various observers, whence it would seem that the chief alterations are precipitation of the calcium and magnesium salts, and changes in the phosphates, so that a large part of these salts become insoluble; decomposition of lecithin and nuclein; coagulation of serum-albumin; some change in the casein so that it is less easily coagulated by the rennet ferment in the stomach, and is also less quickly and completely acted upon by pepsin and pancreatin; and some interference with the fat, so that the globules coalesce and the emulsion becomes less perfect, and probably its assimilation is rendered less easy. To obviate these changes, all of which are at least undesirable, **Pasteurisation** should be employed, and Brown recommends that the temperature used should not be above 158° F., as above this degree of heat the taste of the milk is altered. This heat is sufficient to destroy the tubercle bacillus if continued for fifteen minutes, and has the advantage also of interfering with the digestibility of the milk less than do higher temperatures. The objection to Pasteurisation is that it requires more care than boiling or sterilisation, and moreover requires more special apparatus; on this account Brown is in favour of sterilisation by heating milk to 212° F. for thirty to sixty minutes in cities and amongst the poor.

But after all the one thing needful is **Clean Milk**, for no amount of pasteurising or sterilising can do away with the toxicity of a milk in which bacteria have been producing toxins for many hours before sterilisation is begun. The toxin of the colon bacillus, which is found in large numbers in unclean milk, does not become less virulent when exposed even to so high a temperature as 356° F. The standard of cleanliness, so far as it can be gauged by bacteriological examination, is the number of bacteria per cubic centimetre, and this, according to the Milk Commission of the Philadelphia Pedriatic Society, should be not more than

10,000 per c.c. ; other societies have allowed higher numbers up to 30,000 per c.c. When even this higher standard is contrasted with ordinary milk as sold in this country, which contains about a million or more bacteria per cubic centimetre, it is evident that, as Clement Dukes⁵ has pointed out, there is a crying need for clean milk which may be used for infant feeding without the various cooking processes which are at present necessary.

Bartley⁶ even advocates the use of *raw milk*, provided the milk can be obtained clean, and kept constantly at a temperature below 50° F., and is not more than forty-eight hours old ; such milk he would dilute with whey instead of water, and he points out that it is not necessary to heat even the whey, for the rennet ferment in it can be rendered inactive by adding **Sodium Bicarbonate** in the proportion of a heaped teaspoonful to the quart.

Butter-milk as a food for infants has been recommended recently by various observers. Professor Baginsky⁷ records the results of its use in the Children's Hospital at Berlin as eminently satisfactory. Lactic acid fermentation is induced by means of bacteria in pure cream, and from the cream which has been thus soured butter-milk is obtained, and to each litre of this 15 to 25 grams of wheat-flour and 35 to 50 grams of cane sugar are added ; this mixture is allowed to boil for at least two minutes, with constant stirring ; it is then poured into sterilised bottles and kept in an ice-box until used. Made in this way the butter-milk contains only .35 per cent fat, while there is a large proportion of albumin, 3.4 per cent, and starch is present in the proportion of .26 per cent. Not the least interesting feature of this food is its high degree of acidity ; the importance of alkalinity in milk-mixtures becomes at least problematical when it is seen how well such foods as butter-milk and acid-prepared whey agree with infants. The acidity in this case is due to lactic acid, which seems to have no harmful effect. This food is given undiluted to infants of any age ; the quantity is varied, however, according to the age. Its value is chiefly in acute cases of dyspepsia and gastro-enteritis, but it was taken well also by infants with healthy digestion who were admitted to hospital for other reasons, and sometimes, though less often, it caused great improvement in cases of chronic marasmus. Amongst 300 cases, mostly infants between the ages of two months and seven months, in which this method

of feeding was tried, there were 33 failures, and in some cases the food seemed to have some toxic effect, but in 150 infants the results were excellent.

Curdled Milk has recently been introduced and used with success in the treatment of chronic dyspepsia in infants. Siegert⁸ describes its preparation thus : Fresh or sterilized milk is poured into bottles containing about 7 ounces, and then to each bottle a small quantity of V. Dungen's "Pegnin" is added. This need not be measured exactly, but should be as much as will stand on the end of a pocket-knife ; it is a white powder consisting of a preparation of rennet mixed with milk-sugar. The bottle is then shaken once to mix it thoroughly, and placed in warm water at 40° C. for ten minutes ; the milk is thus curdled, and afterwards vigorously shaken until the coagulum is broken up into fine particles ; it can then be diluted with water if necessary. Langstein⁹ has used this curdled milk with great advantage for dyspeptic infants with vomiting, colic, and wasting. He gave 3 or 4 ounces at intervals of three to three and a half hours, and generally gave it undiluted whatever the age of the infant might be. Vomiting ceased almost immediately, sleep returned, and the infant at once began to gain weight. Such feeding may be continued for one or two months.

Soxhlet's Nutrient Sugar (Naehrzucker) is said by Frucht¹⁰ to be a valuable addition to mixtures of milk and water for infants. This preparation is said to be derived from maltose and dextrin, to which a small quantity of acid calcium salts, and also 2 per cent of common salt, have been added. A satisfactory mixture was two-thirds of a litre of milk with one-third of a litre of water and 76.8 grams of the nutrient sugar. Weissbein¹¹ uses a weaker mixture consisting of one part of cow's milk and two parts of a 9 per cent solution of the nutrient sugar. He obtained remarkable results with this, the infants gaining weight with extreme rapidity.

The value of **Goat's Milk** for infant feeding is perhaps not sufficiently appreciated in this country. Barbellion¹² reports cases showing how excellently infants thrive on this food, which has not only the advantage of yielding a curd which is softer and easier of digestion than that from cow's milk, but has also the virtue of ensuring freedom from tubercular infection, as the goat is refractory to tuberculosis.

REFERENCES.—¹*Brit. Med. Jour.* Sept. 6, 1902 ; ²*Ibid.* Feb. 22, 1902 ; ³*Ibid.* Nov. 15, 1902 ; ⁴*Arch. Ped.* April, 1903 ; ⁵*Lancet*, Jan.

31, 1903; ⁶*Pediatrics*, May, 1903; ⁷*Brit. Med. Jour.* Sept. 6, 1902; ⁸*Münch. Med. Woch.* in *Brit. Med. Jour.* Jan. 25, 1902; ⁹*Jahrbuch f. Kinderh.* Jan. 1902; ¹⁰*Münch. Med. Woch.* in *Brit. Med. Jour.* Jan. 14, 1902; ¹¹*Deut. Med. Woch.* in *Brit. Med. Jour.* Dec. 27, 1902; ¹²*Bull. de l'Acad. de Méd. in Arch. Ped.* Nov. 1902.

INFANTILE PARALYSIS. (See "Paralysis of Infants.")

INFANTS AND CHILDREN, (Diseases of). (See "Chorea," "Convulsions," "Enuresis," "Gastro-intestinal Disorders of Infants" (including diarrhoea and constipation), "Infant Feeding," "Marasmus, Infantile," "Melæna Neonatorum," "Pertussis," "Rickets," "Scurvy, Infantile," "Syphilis, Congenital," "Tubercular Peritonitis.")

INFLUENZA, (Complications and Sequelæ of).

Bertram Abrahams, M.B., B.Sc., M.R.C.P.

The most important complications of influenza belong to two chief types, the suppurations and the pulmonary inflammations.

Suppurative processes are extremely common in the disease, commencing as it subsides, and continuing long after the cessation of other symptoms. Abscesses may be formed in various parts; those in the lungs and pleural cavity are of course often associated with pulmonary inflammations, and may be considered as belonging to this group. The sinuses, especially the frontal and the antrum, are often attacked, and prolonged, even in some cases fatal suppuration may be the result; only last year we saw a young man succumb to the sequelæ of frontal suppuration, the result of influenza, he having had no other illness in his life. According to Goodhart, ulcerative endocarditis is not an uncommon form of post-influenzal pyæmia. An important practical point is that these suppurative cases, running as they do a chronic pyrexial course, are apt to be mistaken for typhoid or tuberculosis; it must be remembered of course that influenza is not infrequently the starting point of phthisis. From typhoid, Widal's reaction affords help in diagnosis, but we have seen several cases which presented all the clinical features of tubercle without any localising sign, and in which the cause was eventually found to be multiple or deep-seated abscesses following an attack of influenza.

The *Pulmonary* complications of influenza are by far the most important known: they occur in 6 or 7 per cent of all cases, and have a mortality which is quite 20 per cent. This mortality

increases with the age of the patient, and it is the lung complications which render the disease so fatal when it attacks old people. It is indeed probable that in more than half of all the fatal cases of this disease, death results from implication of the respiratory passages.

(1,) The most common pulmonary complication is *Broncho-pneumonia*, a disease which was virtually unknown (except as a secondary infection) in adult life, until the pandemic of 1888-9. This affection is believed to be a pure inflammatory broncho-pneumonia due to the influence of the influenza bacillus acting alone.

(2,) *Influenzal Pneumonia without Bronchitis*. This is a type of disease which was not at first recognised; but it is now fully admitted that just as local peritonitis can occur without obvious inflammation of the appendix, so it is not necessary for bronchitis to precede every case of influenza pneumonia. The diagnosis is made chiefly upon the fever and the physical signs; there is often very little cough or expectoration until resolution occurs. Dulness, however, is constant, and is accompanied by fine crepitation, giving place after awhile to curious sounds, which Goodhart aptly describes as sticky râles.

(3,) *Mixed Infection Pneumonias*. (a) Streptococcal; this is a grave form of broncho-pneumonia, characterised by a very high temperature, repeated rigors and delirium; the association of streptococci with the influenza bacillus has an unfavourable influence on the prognosis. (b) Pneumococcal; the pneumonia due to the pneumococcus is modified considerably by association with the influenza bacillus. The primary rigor is often absent, the skin is usually moist, and termination by lysis frequently occurs. There is a great liability to suppurative complications both within and without the lungs.

Other affections which may complicate influenza are acute thyroiditis, encephalitis, nephritis, orchitis, and otitis, whilst skin eruptions such as purpura and pemphigus are also described.

Sequelæ.—Many of these are curious and distressing rather than of serious import; among these may be mentioned a persistent low temperature and an abnormal appetite. Diabetes has also been described as following influenza. But the most prominent, and one may say the most intractable sequelæ of influenza are those associated with the nervous system. These may be classified under three heads; the *neuralgic*, the *neuritic*, and the *neurotic*. As Sir William Gowers

pointed out ten years ago, severe nervous symptoms may follow, as in the case of diphtheria, a very slight attack, or may result from a second or third attack after the patient has recovered completely from the first.

Post-influenzal *neuralgia* attacks especially the head, and shows a predilection for the supra-orbital region. In diagnosing it great care must be taken to exclude suppuration in the sinuses, such as has already been referred to. Another very common site of neuralgia after influenza is the lumbar and sacral region. In such cases there is very often no doubt inflammation of the tendon-sheaths, an extension of which may take place so that an actual myalgia results. Sciatica is also a common result of influenza, and has increased enormously in frequency since that disease reappeared. In our experience this class of affection, particularly myalgia, is most common in those who are gouty, and it seems to be quite rare for a gouty person, who has had influenza, to escape some trouble of this description.

Of the forms of *neuritis* which may follow influenza, the intercostal is perhaps the most characteristic. It is intensely painful, and extremely persistent; it has crippled many a patient for six months. Occasionally optic neuritis occurs, sometimes in one eye, sometimes in both. Multiple neuritis is more common, affecting chiefly the limbs. Gowers points out that this form does not necessarily spend its full force on the extremities, and that it tends to be motor rather than sensory in type. The nerves of the face are attacked by the inflammation more frequently than in most other types of neuritis.

It should be mentioned here that other forms of inflammation in the nervous system also occur from time to time as the result of influenza. Of these *myelitis* is the most common; it may be transverse, focal, or limited to the grey matter. In some cases it is disseminated, and we have more than once seen cases which were apparently true disseminated sclerosis, definitely follow upon an attack of influenza. Meningitis is, as already said, a complication rather than a sequelæ of influenza.

The most characteristic however of all the nervous sequelæ of this disease are the *neuroses*. These assume a type which is in the main so definite that the enumeration of the symptoms by the patient leads at once to the question "When did you have influenza?" The patient is morbidly self-conscious. All the while his physical condition may be perfectly good, though now and then it is far otherwise. Sweating upon the slightest exertion

is a common symptom. Sometimes there is temporary mental aberration, and here the suicidal tendency is likely to be marked. Loss of memory is a prominent feature, and is mainly associated with inability to control and fix the attention. Globus hystericus is an extremely common symptom; there are few cases in which the patient does not complain of some abnormal subjective sensation in the throat. There may be for a while amaurosis, or impairment of the sense of smell or of taste. The ophthalmoplegias which sometimes follow influenza, and may especially impair accommodation, are probably neuritic and not functional in origin. The altered mental state is usually of long duration, and it may be years before the patient recovers his psychical equilibrium.

TREATMENT.—There is no need here to recount the therapeutic measures which are indicated in meeting the complications of influenza; they do not differ from those employed when the same symptoms arise in general. Suffice it to say, that the state of the heart is as ever the first care in the pneumonias, and will require constant and unremitting attention. The neuralgic and inflammatory sequelæ also call for the same general remedial principles. But the general nervous state which has just been described as so commonly following, requires particularly assiduous treatment. Drugs are of but little use except for the relief of marked symptoms. We have seen great benefit arise from daily general **Massage**, though we are not so well satisfied with the results of the complete Weir Mitchell procedure. Above all it is essential that the doctor should know, and if possible teach the patient, that the disease is curable; in such circumstances the duration may be tedious, but the prognosis is almost uniformly favourable.

INSANITY. (*See also* "Dementia Præcox.")

James Shaw, M.D.

TREATMENT (*Suggested by composition of Urine.*)—In last year's *Annual*, Drs. Leeper and Dawson's successes in cases of melancholia, through treating the underlying or accompanying glycosuria, were mentioned. R. Walker¹ reports a case of persecutorial insanity, in which the examination of the urine disclosed a considerable deficiency of uric acid. This finding was taken as the basis of the treatment, which consisted solely in the prescription of **Uric Acid** administered in the form of pills, each of which contained '008 gram. (gr. $\frac{1}{4}$) of the acid. This

dose was at first given every two hours and subsequently at intervals of four hours. A complete cure resulted in eight days.

Dr. J. Loughheed Baskin² referring to the treatment of phthisis in the insane, remarks that the great deficiency of urea in phthical urine, especially when the disease has made progress and the patient is rapidly wasting away, suggests the administration of **Urea**. Pure urea is the best form. It is to be remembered that it is decomposed by a high temperature and by nitrous acid. The **Phosphate of Urea** has been exhibited when both phosphoric acid and urea have been markedly diminished. If the patient is very weak and advanced in disease, 46·6 grains of urea may be given thrice daily; if he is less seriously ill a smaller dose will suffice. Where the patient has not been having sufficient proteid diet, it is wise to increase the amount of proteid, and use a smaller dose of urea. Harper usually begins with 15 or 20 grains thrice daily, and raises the dose by increments of 10 grains until the patient is taking 60 grains three times a day. Baskin adduces facts to show that urea can be administered without any fear of inducing uræmia.

[For contra-indications, etc., see *Medical Annual*, 1903, pp. 520-1.—J. S.]

REFERENCES.—¹*Indian Med. Rec.* No. 16, 1902, in *Merck's Rep.* May, 1903; ²*Jour. Ment. Sci.* Jan. 1903.

INTESTINES, (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

The surgery of the intestines provides the most varied and difficult field of work in the abdomen, and as the ordinary methods adopted in general surgery need here modification, the evolution of intestinal surgery has been accompanied by infinite variety in detail.

The interrupted suture at first employed occupied so much time in application, that many modifications were soon introduced. In 1885 Mr. Bishop showed¹ there were no fewer than thirty-three distinct methods of enterorrhaphy, and since, probably as many more have been introduced.

In 1887 Senn's plates were employed to facilitate the process of intestinal anastomosis, and I remember what a great impetus was given to the surgery of the intestinal canal by Dr. Senn's very able paper and demonstration at the International Medical Congress at Copenhagen. In 1892, being dissatisfied with the methods then in vogue, I invented a **Decalcified Bone Bobbin** shaped like a cotton reel, which would form a temporary splint around which to apply two continuous sutures, one to the serous

and another to the mucous margin of the new openings ; which method has proved most useful, and I feel sure has ministered to whatever success I have had in this line of work. The continuous sutures applied over the bone bobbin considerably shortened the time of operation, and left the union so safe and secure that in a large number of operations since performed on the hollow viscera, I have continued to employ it with great satisfaction. As illustrating its utility, the series of 103 cases of posterior gastro-enterostomy performed by me up to the end of last year, were all done by this method ; and in the 4 cases that died, the union, as proved by necropsy, was perfect : moreover, I know that the anastomotic opening has not the tendency to contract that occurs after some of the other methods, and as the bobbin dissolves within two or three days, no foreign body remains to cause further trouble. In end-to-end junction of the divided bowel in enterectomy, the decalcified bobbin has given me equal satisfaction, and, though from the nature of the cases the actual operative mortality has been greater, yet in no case has the result been due to imperfect coaptation.

In 1892, Dr. Murphy, of Chicago, invented his well-known **Metal Button**, which, since it is employed without previous application of sutures, can be used very quickly ; and by its distinguished inventor, as well as in the hands of other surgeons, it has been adopted with great success. The chief disadvantages it presents are : first, that it is necessarily associated with sloughing of the compressed and coapted ends of the bowel ; next, that a foreign body is left in the canal, which sometimes produces ulceration and other troubles ; and thirdly, that the opening has been found in some cases to contract and necessitate a further operation. Along with many other surgeons, I gave it a thorough trial, but soon reverted to the method of suture round a bobbin, and the general trend of opinion is now to rely on simple suturing with or without any mechanical support.

Enterectomy.—Cases of tumour of the bowel, when I was a student, were given up as hopeless, though a little later colotomy was performed as a means of giving relief, which was of course merely temporary. At the present time such growths are removed before the supervention of obstruction, and with very good results both immediate and remote ; for instance, Mr. H. Littlewood² reported a series of 14 colectomies with 10 recoveries, and out of 38 enterectomies which I have performed, 26 recovered ; but out of my last 16 in private 15 recovered,

showing the progress that has been made in operative technique. Drs. C. S. and W. D. Hamilton³ contributed a series of twelve enterectomies with eight recoveries. They employed simple suture, the metal button, and the bone bobbin.

It is astonishing what large proportions of the intestinal tract may be taken away with safety ; for instance, Mr. Barker removed $5\frac{1}{2}$ feet of damaged bowel with success in a case of strangulated gangrenous hernia, and I have on several occasions removed part of the ileum, the cæcum, the ascending and part of the transverse colon, with recovery of the patient. In the first number of the *International Archives of Surgery* is a description of a case in which Dr. Roswell Park removed 8 ft. 9 in. of gangrenous small intestine, the patient being well a year later, and in the same paper reference is made to 17 other cases in which over six feet of bowel had been excised, with recovery in 14 ; in one of these cases no less than 11 feet were removed. A successful case is also reported in which Dr. Lelienthal⁴ removed the entire colon and part of the ileum for hyperplastic colitis.

Colotomy.—In 1884 colotomy had the enormous mortality of 31·6 per cent for the lumbar and 53·1 per cent for the inguinal operation, as shown by Dr. W. R. Batt, who collected the records of 351 cases ; in 1889, under improved technique, the inguinal operation was re-introduced by Mr. Allingham, with the result that the mortality was diminished within a short time to under 10 per cent, even including cases of acute obstruction ; excluding the acute cases, the mortality is under 5 per cent.

Proctectomy.—Looking to the future, it seems highly probable that colotomy will be largely replaced by the removal of the disease, for it has been clearly proved that there is no part of the lower bowel which cannot be safely excised if taken sufficiently early, and I can point to a number of patients living in comfort from whom I removed rectal cancer years ago ; in one the patient being in good health ten years after. Mr. Watson Cheyne estimates the mortality of excision of the rectum at from 5 to 10 per cent, and refers to Kocher's statistics, in which 28 per cent of cases remained well from three to sixteen years after proctectomy. Hocheneff⁵ shows 30 permanent recoveries in 174 operations.

Obstruction.—For the rational treatment of intestinal obstruction, we owe much, first to the anatomical researches of Sir Frederick Treves, and secondly to his admirable work on the

pathology and surgery of the subject. Although there are vague accounts of a successful operation for volvulus in 1768, the surgery of the last century, until within twenty years of its close, had no history bearing on the subject of intestinal obstruction, and I can remember when it was considered no discredit to stand by with folded hands while a patient was dying of internal strangulation. Many will remember it being proposed seriously less than twenty years ago, in one of the medical societies, by a very eminent surgeon, that operation could be frequently avoided by calling in the nearest policeman, and suspending the patient head downwards with the knees bent over the constable's shoulders, who was then directed to jump up and down a number of times so as to displace the hernia or undo a twist; this will show the state of intestinal surgery in the eighties. At the present day the differential diagnosis has been so well worked out, and the technique of operative work so much improved, that no physician or surgeon long delays resorting to operation if relief be not soon obtained, and the results, as shown by numerous reports, amply justify the change. Did space permit, numerous examples could be furnished of the cure of acute intestinal obstruction by the division of bands, the untwisting of the volvulus, the unfolding of intussusception, the reduction of internal hernia, and the removal of concretions; all of which, but for the recent advances of surgery, must inevitably have died.

Volvulus of the small intestine has been the subject of papers by Vaughan⁶ and Moynihan;⁷ Intussusception by H. M. Rigby⁸ and Crawford Renton.⁹ In all these papers early operation is preached. The appendices epiploicæ have recently been proved to be at times the site of cysts and inflammation, through infection conveyed from the interior of the bowel.¹⁰

A remarkable case of gunshot wound of the abdomen in which nineteen perforations of the intestines and four lacerations of the mesentery were successfully treated by abdominal section and suture, is recorded by Robert F. Amyx.¹¹ In each case he cut away the contused edges of the openings before applying sutures, and afterwards adopted drainage, both of which procedures he considered ministered to the success of the treatment. Another successful case is also reported by W. J. Peftus.¹²

Radical treatment of Chronic Intestinal Tuberculosis.—I have¹³ reported a series of cases in which a radical operation, either in the shape of enterectomy or of short-circuiting, and so setting

at rest the diseased bowel, had been done for the above condition. The cases of chronic tuberculous disease in the intestine treated surgically have raised hopes in my mind as to the possibility of doing good, not only in chronic cases such as there related, but in some more acute cases, where, if the disease be strictly limited, a radical operation might remove it, but where, if more extensive, a short-circuiting might set the part at rest and relieve it from irritation, thus enabling the ulcers to heal; the surgical measures being supplemented by general, medical, and hygienic treatment.

The stricture in Case 1 was caused by a stenosis of the ileo cæcal valve, but the lumen of the adjacent ileum and cæcum was also seriously narrowed by thickening of their coats. Cases 2 and 3 were characteristic examples of tuberculous ulcers which usually begin in the lymphoid follicles and adopt a transverse direction, following the course of the vessels around the whole circumference of the bowel, thus leading to stricture in chronic cases from the lymph, which is thrown out to limit the ulcerative process, tending to contract. The situation in the ileum and the multiple character of the strictures were also characteristic of tubercle. While in cases 1 and 7 the adhesions to adjoining parts were most intimate, in the other cases the affected part of the bowel was quite free, thus rendering operative measures quite easy and simple. In cases 1, 2, 3 and 5 my decalcified bone bobbin was employed as a temporary splint over which to apply sutures, a method which I have described on numerous occasions, and which I still employ and advocate as being simple and efficient. The physiological rest to the diseased parts secured by short-circuiting (as in case 3) and by colotomy (as in case 6) seemed to answer so well, that where the radical operation of excision would involve serious difficulties, or the patient is not in a condition to bear it, I would not hesitate in future to be content with similar procedures, and then to trust to general treatment and hygienic surroundings to assist in the cure. If in the future my suggestion as to operative treatment in acute cases be thought advisable, I anticipate that short-circuiting the diseased area will be found to be the more useful procedure, as it is the easier and safer method to pursue; but experience only can show whether these suggestions will prove of so much service in acute as they are in the chronic cases.

It is interesting to note that in cases 1 and 7, where there were tuberculous nodules in the peritoneum—where, in fact,

there was tuberculous peritonitis co-existent with the bowel disease—the mere exploratory operation had not cured or even arrested the tuberculous process; but that the radical operation of removing the principal focus of the disease, or as in case 3 the short-circuiting and so setting at rest the diseased bowel, was in all three cases effectual in putting a stop to the tuberculous peritonitis, and, so far as one can say without seeing the parts exposed, in curing the more diffuse disease.

All surgeons must have had the experience of curing tuberculous peritonitis by simple abdominal section with or without drainage, and probably many of us have also experienced disappointment in other cases where the effusion has returned after longer or shorter interval. May the explanation of these recurrent cases lie in the fact that the original focus of disease in the ovaries, Fallopian tubes, or bowel has not been removed, and has been again the starting point for further diffusion of the tubercle throughout the peritoneal cavity? If this be a correct surmise the remedy is quite clear, that wherever the original disease may be, it should be removed, if that be possible without adding seriously to the risk of operation. I have acted on this principle in a number of operations for tuberculous peritonitis, and have removed masses of tuberculous, mesenteric, or retro-peritoneal lymphatic glands, tuberculous Fallopian tubes and ovaries, loops of tuberculous intestine, and tuberculous appendices, and this with such success as to encourage me in following up the method, and in recommending it to the attention of other surgeons.

Dr. Crawford Renton¹⁴ has recorded two successful cases of enterectomy for tuberculous tumours, and ends his paper with the following remarks: "These two cases are in the same category as those published in the *Lancet* a short time ago by Mr. Mayo Robson, and emphasise the remarks he made with reference to removing tuberculous tumours of the bowel, and for this reason I record them."

Mr. Roughton¹⁵ records a successful case of short-circuiting for tuberculous disease associated with fæcal fistula.

Colitis.—Some years ago I proposed the operation of colotomy for certain obstinate cases of colitis, and illustrated my paper before the London Clinical Society by examples. Dr. Hale White and Mr. Golding Bird,¹⁶ at the same society, May 23rd 1902, gave the subsequent history of three cases in which the operation had been done three years previously, and the artificial

anus subsequently closed; two cases were quite well, and in one case the improvement at first obtained had not continued. Dr. Dawbarn,¹⁷ adopting the same principle, though by a unique method, suggested by Weir, has treated amœbic colitis by bringing the appendix to the surface, and through its lumen **Flushing the Colon** every six hours with a warm solution of permanganate of potash.

Tetany.—It is well known that tetany frequently accompanies dilatation of the stomach, and that it not infrequently ends fatally, unless radically treated, but it is extremely rare to find it following on dilatation of the bowel. The case reported by Dr. Greenfield¹⁸ is therefore of extreme interest. At the *post-mortem* examination there was found acute dilatation of the upper part of the small intestine without any definite obstruction of the gut. I have recently seen a similar case.

Post-operative Intestinal Obstruction.—After briefly reciting the principal features of a typical case of intestinal obstruction following laparotomy, Walker¹⁹ remarks that it has been variously estimated that from 1 to 2 per cent of deaths after laparotomy are due to intestinal obstruction. Klotze has found obstruction in 5·5 per cent of 421 laparotomies. The prognosis in these cases is unfavourable, particularly if adhesions be present. Of the fourteen cases collected by Senn, only one recovered after secondary laparotomy.

The treatment of post-operative obstruction due to adhesions consists in properly separating the adherent intestine, and in remedying peritoneal defects so as to avoid further trouble. The most important prophylactic precautions enumerated by Senn are quick, but not hasty, operating; withholding of irritating antiseptics from the abdominal cavity; gentle and as little handling of the abdominal contents as possible; careful hæmostasis; covering of raw surfaces with peritoneum wherever this can be done; and an early resort to cathartics and high enemata to maintain or restore intestinal peristalsis.

Acute Duodeno-jejunal Intestinal Obstruction.—Every experienced surgeon, according to Walzberg,²⁰ has seen cases of acute gastric dilatation following intra-abdominal operations. In some cases which otherwise pursue a normal course, the patient will continue vomiting for several days after the operation, or if chloroform has been used, vomiting will begin three or four days later, and symptoms of profound prostration will appear. There is usually no feeling of nausea, the act of vomiting occurs

at long (three to four hours) intervals, and large quantities of fluid are expelled. From the beginning the vomited material contains considerable bile: at first it is nearly clear, and has a yellowish-green or dark-green colour. It soon changes to a cloudy, dirty, brownish-green, and then gradually to a reddish-brown, and finally to a very dark brown. Eight cases presenting symptoms of acute gastric dilatation following abdominal operations, recovered after the hypodermic administration of **Morphine**, and repeated evacuation of the gastric contents by means of a **Stomach Tube**. A ninth case terminated fatally on the seventh day following the opening and drainage of an hepatic abscess.

The autopsy findings in this case were very instructive, and doubtless furnish the true explanation of the origin of the above symptoms. No signs of peritonitis were found. The stomach and upper part of the duodenum were enormously distended. The large and the remainder of the small intestines were empty, firmly contracted, displaced downward into the pelvis, and were covered by the omentum. The omentum and intestines felt dry, and gave the impression of being adherent. On raising the omentum and the transverse colon, the duodenum was found greatly distended above the point where it passes under the parietal attachment of the mesentery. The base of the mesentery crossed over in front of the gut in the form of a three-inch band, and was firmly held in this position by the displaced intestines. The lumen of the duodenum was thus occluded by pressure against the vertebræ. As this band was slowly cut from right to left, the contents of the duodenum followed the course of the knife and distended the collapsed gut, and when the band was completely severed, the entire small intestine and part of the colon were immediately distended. An incision into the stomach revealed the presence of a mucoid, dirty, greenish-brown fluid.

The mechanism of this condition is clearly explained by a primary dilatation of the stomach. The atonic intestines are pressed down into the pelvis, and held there to a certain extent by the entangled omentum. The mesentery is dragged upon, pinches the duodenum against the vertebræ, and gives rise to the symptoms of acute intestinal obstruction. The presence of a long mesentery is requisite for the production of the condition.

The best plan of treatment for these cases probably consists in frequent **Lavage**, and if the symptoms do not subside, the

patient should have the pelvis elevated or be turned on the side. In severe cases the supine position offers a prospect of relief. If these measures fail, a gastro-enterostomy should be considered.

Intestinal Perforation in Typhoid fever.—The advances in abdominal surgery have been so great since Mikulicz's first operation for perforation of the intestine, that the profession is to-day almost unanimous in the belief that the only treatment for perforation of the bowel in the course of typhoid fever—as soon as the diagnosis has been made—is a surgical one. It may be many years before we can hope for much improvement in the surgical methods of treatment of diffuse peritonitis. The operative results will, however, become better if the patients are referred to the surgeons more early. Improvement can therefore only come with improved methods of diagnosis. It is from this point of view that efforts such as that of Cushing, and his suggestion of a perforative stage—are of value. While we may not agree with Cushing as to the possibility of diagnosing the condition correctly in any more than exceptional cases, the effort is certainly one in the right direction.

In a paper by Elsberg, before the New York Academy of Medicine, April 9, 1903, the attempt has been made to show

(1.) That perforation of the intestine in the course of typhoid fever is nearly as frequent in children between the ages of six and fifteen years as in adults.

(2.) The symptoms do not differ essentially from those of adults.

(3.) Although recovery may, in exceptional cases, take place without operation, the treatment should be a surgical one as soon as the diagnosis has been made.

(4.) The prognosis after operation is more than twice as good in children as in adults, and very early operative interference offers the best chances of recovery.

The statistics are as follows : Total number of cases operated on, 289 ; total number of patients recovered, 75, or 25·9 per cent ; total number of patients died, 214, or 74·1 per cent ; total number of adults, 264, or 91·4 per cent ; total number of children, 25, or 8·6 per cent ; total number of adults recovered, 59, or 22·4 per cent of the adults ; total number of adults died, 205, or 77·6 per cent of the adults ; total number of children recovered, 16, or 64 per cent of the children ; total number of children died, 9, or 36 per cent of the children.

Therefore, 25 or 8·6 per cent of the operations that have been performed, were in children, with a mortality of only 36 per cent, while 264, or 91·4 per cent of the total number of operations were done in adults, with a mortality of 77·6 per cent. The chances of recovery are therefore more than twice as good in children as in adults.

G. E. Armstrong²¹ says that during the past six years 932 cases of typhoid fever have been treated in the Montreal General Hospital. Perforation of the ileum occurred in 34 cases, or 3 $\frac{2}{3}$ per cent. In one case, of a most malignant type, with tympanites, dulled sensorium, and profound toxæmia, the perforation was first recognised at the autopsy. In 33 cases, the accident, if we may call it so, was recognised during life, and the opening closed. Five of these recovered. In one other case the patient died five days after operation, and the pathologist reported that death was due to typhoid toxæmia, and not to the perforation. If that case be included, we have 6 recoveries in 33 cases, or 18·18 per cent.

REFERENCES.—¹*Brit. Med. Jour.*, Oct. 10, 1903; ²*Lancet*, May 30, 1903; ³*New York Med. Jour.*, Feb. 20, 1903; ⁴*Ann. Surg.*, April, 1903; ⁵*Therap. Gaz.*, Sept., 1902; ⁶*Amer. Jour. Med.*, May, 1903; ⁷*Med. Chron.*, Feb., 1903; ⁸*Lancet*, Feb. 7, 1903; ⁹*Scott. Med. and Surg. Jour.*, April, 1902; ¹⁰*Lancet*, Oct. 24, 1903; ¹¹*Med. Rec.*, Sept. 20, 1902; ¹²*New York Med. Jour.*, Aug. 30, 1902; ¹³*Lancet*, Sept. 27, 1902; ¹⁴*Lancet*, Nov. 15, 1902; ¹⁵*Med. Press*, Nov. 5, 1902; ¹⁶*Ibid*, May 28, 1902; ¹⁷*Ann. Surg.*, April, 1903; ¹⁸*Lancet*, Oct. 10, 1903; ¹⁹*Phys. and Surg.*, May, 1902; ²⁰*Arch. f. klin. Chir.*, Bd. 66; ²¹*Ann. Surg.*, Nov., 1902.

IRITIS.

A. Hugh Thompson, M.A., M.D.

A case of subacute iritis in connection with an attack of mumps is related by Collomb,¹ who refers to a somewhat similar case published in 1901. The attack was subacute, gave rise to somewhat tough posterior synechiæ, was complicated by vitreous opacities, but yielded fairly well to ordinary treatment. The patient, who was a man of twenty-nine, had never had syphilis, gonorrhœa, or rheumatism. In such a common disease as mumps, it certainly needs more than a few isolated cases of iritis to establish any causal connection between the two. Moreover in the case of adults the more common causes of iritis can seldom be excluded with absolute certainty. Connection between the two diseases is possible, but needs further proof.

REFERENCE.—¹*Rev. Méd. de la Suisse Rom.*, Jan. 20, 1903; *Brit. Med. Jour.*, May, 1903.

JAUNDICE.*Robt. Hutchison, M.D.*

As Hirtz points out,¹ when the cause of jaundice is mechanical, the treatment is purely surgical. In those varieties which are due to intrinsic causes there are three rules for treatment: (1,) To see that the biliary passages are patent; (2) To keep a careful watch on the eliminative power of the kidney; (3) To adopt all possible means of getting rid of bile from the system.

No point is of greater importance in the treatment of this malady than is the regulation of the diet. In the early stages nothing is better than an absolute milk diet, and if the milk is too rich in cream it should be skimmed. Milk may often be diluted with Vichy water with advantage. Sometimes iced milk is well borne, sometimes not; but in no case should pieces of ice be added to the milk. Occasionally asses' milk is better borne than that of the cow. When a more liberal diet becomes necessary, care should be taken to exclude fats, eggs, and alcohol. A vegetarian diet is preferable to all others. Carrots have been recommended, and are much used at Vichy. To keep clear the bile passages it is usual to make use of purgatives, but drastic aperients must be avoided. **Sulphate of Soda** acts well, and **Calomel** may be given from time to time. The author recommends the employment of **Cold Enemata** in the morning, consisting of one or two litres of water at 15° or 18° C. Intestinal peristalsis is thus easily induced, and it is possible that contraction of the gall-bladder may also ensue. Enemata of this nature also increase diuresis. **Salicylate of Soda** is the favourite drug of the author, but he does not give more than 1 gram for a dose. It is useful, he thinks, in chronic jaundice. Massage may be useful, as also may faradisation, which the author prefers to galvanism. One electrode is placed over the hepatic region, the other on the spinal column. In some cases in which dropsy of the gall-bladder ensues it may be necessary to puncture the latter. When foetid colitis occurs, doses of **Charcoal**—50 centigrams to a gram—may be usefully employed.

How important it is to attend to the eliminative power of the kidney is proved from the history of a boy of twelve. In the playground he received a severe blow over the right kidney, and suffered in consequence from hæmaturia, followed by intermittent albuminuria. But he had returned to school, and was in fair health, when he underwent a severe fright, followed by jaundice. For a week the icterus was quite benign, but at the end of this time threatening symptoms supervened—epistaxis, petechiæ on

the surface of the body, fever, and a typhoid condition. In other words, the jaundice became malignant, and the child died. The author attributes the fatal event to the previous injury to the kidney, and the consequent imperfect elimination of biliary poisons. In cases of malignant jaundice **Cold Bathing** has sometimes been successfully employed. But it is important in this condition to combat the heart failure which supervenes, which may be done by means of **Caffeine**, **Strychnine**, or **Sparteine**. Serum injections do not appear to be of much use in this dangerous form of the malady.

REFERENCE.—¹*La Méd. Mod.* Sept. 3, 1902 ; *Treatment*, Dec. 1902.

KIDNEY, (Surgery of).

E. Hurry Fenwick, F.R.C.S.

Estimation of Functional Capacity of the Kidney.—No item of knowledge is so valuable in urinary surgery as a correct appreciation of the "stress resistance" of the kidneys when under the strain of an operation. It is, however, abundantly clear that the ordinary methods of urine analysis are quite inadequate, and often fail signally in affording us any real knowledge of the working capacity of the kidneys. Various new methods of estimating kidney health have been brought forward in the last few years, and have been widely tested and as widely approved. If all that is stated of these methods could be sustained, or even if the methods themselves could be improved upon, it might be confidently asserted that urinary surgery in the future would be robbed of its greatest danger.

Among the methods advocated for artificially testing the eliminating power of the kidneys and their structural health, the following are the most noteworthy.

(1,) *Cryoscopy*—a test which consists in estimating the freezing point of the blood and urine of the patient.

(2,) The *phlorizin* test—the production and estimation of an artificial glycosuria.

(3,) The *methyl blue* test—a colour test for the permeability, as it is termed, of the kidney.

(4,) *Ureteric meatoscopy*—the examination of the mouth of the ureter as indication of disease in the corresponding kidney.

These methods, together with the determination of the quantity of nitrogenous products in the urine, and microscopy of this secretion, offer a delicate and a precise knowledge of the renal function.

In collating the literature on this subject I have made the

freest use of Dr. Francis S. Watson and Dr. W. T. Bailey's articles on the two first divisions, and of Cathcart's résumé, and have alluded to my own observations on ureteric meatoscopy for the last.

(1.) **Cryoscopy** is the name given to the process whereby the freezing point of certain liquids may be compared with that of distilled water. Dr. Bailey, says Raoult of Grenoble, introduced it for the purpose of measuring urinary toxicity, as well as to throw light upon the metabolic changes in the blood, cerebro-spinal and pleural fluids. He was the first to establish the fact that the freezing point of liquids was directly proportional to the number of molecules contained in them; that is to say, the freezing point of a liquid is the measure of the molecular concentration. The greater the number of molecules which are dissolved in a liquid, the lower will be its freezing point as compared with that of distilled water. The applications of this principle as an aid to diagnosis were first made by Dreser, Winter, and especially by Koranyi of Budapest, with reference to the freezing point of the blood and urine, in connection with the renal function of the normal and diseased kidney.

It is established that if the freezing point of the blood and urine of a person with a severe kidney lesion be taken, it will be found that the blood freezes at a much lower temperature than normal, while the freezing point of the urine will be much higher. The reason is, that those solids which should have been excreted in the urine are, on account of impaired renal function, retained in the blood. The proof that this condition takes place is afforded by the experiments of Richter and Roth, who found that a decided lowering of the freezing point of the blood took place within twenty-four hours after double nephrectomy in animals; whilst the removal of one alone had no such effect unless the other kidney was injured, when the same result took place. It has been found that the freezing point of the *urine* shows at times considerable variations which are not indications of kidney insufficiency. Thus, Koranyi stated that large abdominal tumours, especially those of the kidney, may be accompanied by a high freezing-point of the urine, without actual impairment of renal function.

It is therefore advisable always to have a careful estimation of the urea as well. Kummell, who has done so much to develop the practical application of cryoscopy in renal disease, states that the nearer the freezing-point of the urine comes to that of

distilled water, and the greater the diminution of the urea, so there will be found a corresponding destruction of the renal tissue. In one of his latest articles he gives the results obtained from over 250 cases. He finds the normal or average freezing-point of the blood in healthy persons without kidney lesions to be 56° C., varying from 55° to 57° below zero, that of the urine being more variable, standing between 1.2° and 2.3° below zero. A freezing point, of the blood, therefore, of 56° or lower, and a freezing point of 1° or higher of the urine, indicates a degree of renal insufficiency or impairment making operative interference on the kidney dangerous and unjustifiable.

The method is fairly simple. The amount of blood and of urine required being about 15 to 20 c.c., the urine must be obtained, says Kummell, by ureteric catheter, the blood by means of a small trocar inserted into one of the prominent veins of the arm, and collected in a perfectly clean test tube. Beckmann's apparatus is used. This consists of a large jar containing a mixture of cracked ice and salt; into the centre of this mixture is forced a large glass cylinder or test tube, and supported by the cover of the jar. The large test tube is the receiver for a smaller test tube which is to contain the blood or urine, kept in contact with the walls by means of a cork and a rubber band about the bottom of the smaller tube. In the small tube is suspended through the stopper closing its mouth, the thermometer. The thermometer is a special one, graded to $\frac{1}{100}$ C. with an absolutely correct zero point. (This should be verified from time to time.)

To find now the freezing point of the blood or urine, a sufficient amount should be placed in the small test tube to completely cover the bulb of the thermometer. The liquid should be stirred occasionally by means of a wire passing through the stopper. The column of mercury will at first fall to a point where it remains for a short time stationary, after which it will slowly rise to a permanent level—the freezing point. The whole test should not take more than fifteen to twenty minutes.¹

Cathcart² reviews Kummell's corroborative clinical experiment thus: In a paper read this year at the German Surgical Congress, Kummell states that in the last two and a half years he has employed cryoscopy of the blood, and generally also ureteral catheterisation, before undertaking nephrectomy. Since doing this he has had no death from failure of the remaining kidney, whereas before that he had four deaths from this

cause. With the means previously at his disposal, he had been unable to estimate properly the state of the remaining kidney. He uses the sign δ for the freezing point of the blood, and the sign Δ for that of the urine. As the result of ascertaining δ in 265 cases, in all of which he has never found the method unreliable, he lays down the following general rules. When considering the question of nephrectomy, if $\delta = \cdot 56$ (below freezing point of distilled water is always understood) the surgeon need not hesitate to perform nephrectomy, because one kidney must be sound. If $\delta = \cdot 58$, nephrectomy may be performed without permanently bad results, but the patient will probably be seriously ill for some time after nephrectomy. If $\delta = \cdot 59$ it is admissible only after the relative condition of both kidneys has been ascertained by testing Δ , and the amount of urea and sugar (after phlorizin injection) present in the urine drawn off from each ureter by the ureteral catheter. If $\delta = \cdot 60$, nephrectomy is inadmissible (except of course in the case of abdominal tumours already referred to). In many cases where nephrectomy was performed upon a patient with δ much below normal, the patient has improved, and at a subsequent trial δ was found to have risen to the height justifying nephrectomy, which was accordingly done with a successful result.

Although Kummell does not say so distinctly, he seems to assume that when $\delta = \cdot 56$, one kidney at least must be normal. It is easy to understand that if δ is below normal both kidneys must be more or less affected; but if a simple sound kidney will suffice for the needs of the body, it is difficult to see why sound portions of the two kidneys should not do the same. Apparently, however, this is not a practical difficulty, as Kummell has never had trouble with any of his cases of nephrectomy where the δ was normal before the operation.

(2,) **The Phlorizin Test.**—Phlorizin is a drug extracted from the bark of the root or stem of the apple, pear, and plum. Glucose is separated from it in the course of its passage through the body, sugar appearing in the urine subsequent to its administration, the separation of the sugar taking place, it is asserted, in the epithelial structures of the glomeruli and tubules and in no other part of the body (a statement which, by the way, is rendered questionable by an experiment of Domenicis). Hence, if these epithelial structures be diseased or deficient in working capacity, the amount of sugar excreted after the administration of a given

quantity of phlorizin will be an evidence of this diminished secretory power of the kidney.

The technique of the phlorizin test is exceedingly simple; 5 milligrammes of the drug,* to which an equal quantity of Na_2CO_3 is added in order to hold the phlorizin in solution, is dissolved in 20–30 minims of sterilised water. This is injected subcutaneously with aseptic precautions, the patient having emptied the bladder immediately beforehand. Half an hour after the administration of the drug, sugar should appear in the urine, if there is normal sufficiency of the renal function. [20 c.c. of the urine is examined.] Serious disease of the kidney is indicated if none is present, and if its appearance is delayed, or only a small percentage found, it is taken as an indication of renal insufficiency.

Others inject 1 c.c. of a 1 per cent solution of phlorizin, and state that 1–2 grams of sugar should be eliminated in the course of four hours, but that the quantity eliminated varies between .50 to 2.50 grams. If the differential capacity of the renal power has to be estimated, the urine necessary for examination must be taken by the ureteric catheter from either ureter.

Dr. Watson gives some very interesting and instructive conclusions.

(a.) The average quantity of sugar eliminated in the first half-hour after the administration of the drug subcutaneously in the dose stated, and when the kidney is normal, is about .45 per cent. The first half-hour's elimination is greater than the second half hour by about .06 per cent.

(b.) When renal disease exists, the first half-hour's quantity of sugar eliminated is, for a series of cases, about half as much as when the kidneys are normal.

(c.) The renal function as judged by the phlorizin test is not in any way impaired by ether anæsthesia, if the kidneys be normal.

3.—**The Methylene Blue Test.**—Many differ as to the value of the use of methylene blue in testing renal sufficiency. If methylene blue is injected or swallowed, it is excreted by the urine, colouring it a blue or green. Albarán and Bernard found no definite and constant relation between renal disease and the excretion of the blue, and Nesti concludes that the methylene blue test has absolutely no value. But others assert it is of value, the coloration

* Allen and Hanbury, Vere St., London, supply the collater with the solution sufficient for one injection, in small sealed glass capsules.

of the urine being diminished in interstitial nephritis, though the blue passes through the kidney in acute or subacute nephritis. The test consists in injecting 1 c.c. of 1-20 solution of pure methylene blue into the gluteus maximus. The blue foreign substance is passed under normal conditions in half an hour in the urine, colouring it a pale green tint. This colouration should become stronger, and reach its maximum of a deep green at about the 3rd or 4th hour; it disappears gradually, taking about 40 to 50 hours to be eliminated.

4.—**Ureteric Meatoscopy.**—Hurry Fenwick³ has made an especial study of the mouths of the ureters by means of the electric cystoscope, and asserts that a great deal of knowledge can be thus gained as to the working capacity and disease of the corresponding kidney. The subject is divisible into two sections: I.—The character of the ureteric efflux. II.—The appearance of the ureteric orifice.

I.—THE EFFLUX OR FLOW OF URINE which issues from the ureteric orifice possesses certain characters from which clinical inferences may be deduced, thus:—

(1,) *A strong, rapidly-repeated efflux of a clear urine from both orifices* usually denotes the previous exhibition of a diuretic or hyper-secretion due to disease.

(2,) *A rapidly-recurring jet of clear urine issuing from one orifice*, and that being of large size and the other small, indicates a slight dilatation of one pelvis and one ureter from over-work, the other being deficient in activity.

(3,) *Large-volumed, rapidly-repeated, opaque effluxes* are of three characters. (a) A bloody-coloured efflux, of large volume and rapidly repeated, denotes a small pelvic source of hæmorrhage, an over-active, mainly healthy kidney, artificially stimulated by the blood, or the cause for the blood, and a healthy ureter: one sees such a condition most commonly in the hæmaturia of chronic interstitial nephritis; (b) A rapidly recurring efflux of muddy puriform urine indicates an over-active kidney, stimulated to increased exertion by mild pyelitis, and possibly by a calculus fixed near the ureteric orifice of the renal pelvis; (c) If the efflux is rapid, unilateral, and creamy white (the urine being chyluric), there is, in all probability, a communication between the dilated lymphatics of the renal pelvis and that reservoir.

(4,) When an efflux is merely a trickle and not a jet it generally denotes an inefficient kidney. It may be *pyuric*, in which case

the kidney is crippled by inflammation. It may be *blood*, which would point to an inefficient kidney with pelvic bleeding.

(5,) When the efflux is solid and not liquid, there is always grave indication of pressure in the pelvis of an inactive kidney. If (a) Solid blood clot issues, it points to profuse pelvic hæmorrhage; (b) Solid pus in tapes or rolls, it is a grave indication of the total secretory death of a suppurating kidney.

II.—APPEARANCE OF THE URETERIC ORIFICES.—There is no doubt that in a certain proportion of cases of disease of the renal pelvis and ureter, a distinct alteration in the shape, size, and colour of the corresponding lower ureteric orifice does ensue. I am sure that such changes are worthy of careful study, for they afford the surgeon a valuable indication of the site and sometimes of the character of the disease. But I do not wish it to be inferred that the lower ureteric orifice *invariably* sympathises with the renal pelvis, or that it proves an infallible guide to renal disease; still less do I wish to convey the idea that the absence of any orificial change indicates a healthy upper urinary tract. I merely lay stress upon the fact that in a fair proportion of cases of disease of the renal pelvis, the appearance of the lower orifice of the corresponding ureter will afford a valuable clue to the presence and nature of the disease.

The following axioms may be permitted:—

(1,) There is no doubt that the vesical orifices of the ureters differ in aspect in different individuals. But so slight are the variations in appearance, that a type can be easily fixed upon to represent the normal.

(2,) Abnormal appearances, if they are to be relied upon at all for inferential diagnosis, must be marked; nay, more, I think they should be *striking*.

(a,) *An elongated turgid orifice like a long congested meatus of the penile urethra, denotes dilatation of the corresponding renal pelvis, and marks a tendency for the ureter to dilate from above downwards.*—If on contrasting two ureteric orifices it is noticed that one appears elongated, the lips swollen, and the opening a darkly congested furrow (*Plate XVI, Fig. A*), and not as normally obtains, a slit, then the cystoscopist may infer that the pelvis of the former kidney is dilated—it may be slightly or enormously, for the length of the lips of the orifice is no measure of the dilatation of the renal ureteric pelvis. The pelvis *only* may be dilated and the ureter normal; in fact, I have often seen

PLATE XVI.

ABNORMALITIES OF LOWER URETERIC ORIFICE AND SURROUNDING AREA.

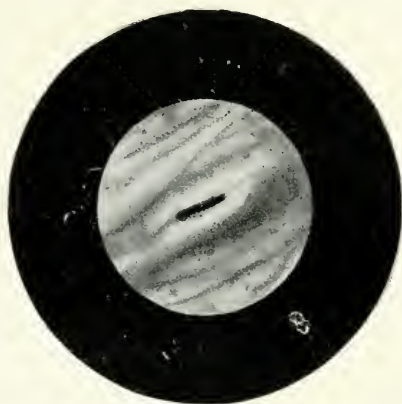


Fig. A —Elongated turgid orifice, indicating a dilatation of the corresponding renal pelvis.



Fig. B.—An “arched” or inguinal-ring-shaped orifice, probably the early sign of back pressure on the ureter.

PLATE XVII.

ABNORMALITIES OF LOWER URETERIC ORIFICE AND SURROUNDING AREA.



Fig. C — A "Golf-Hole" ureteric orifice denoting atony of pelvis and ureter.



Fig. D.—Narrow orifice, with a puckered irregular outline, denoting a past stage of severe pyelitis.

the entire upper third of the ureter white and healthy to the eye, though the pelvis has been distinctly dilated, and the vesical orifice of the ureter elongated and turgid. It must, however, be remarked that cases of dilated renal pelvis exist without any alteration being noticed in the size of the corresponding ureteric orifice.

(b,) *An orifice like an oval arch is the first sign of an early grade of dilatation of the ureter.*—Occasionally the cystoscopist will notice one ureteric orifice, even both, to be unduly large and white; the lips no longer exist as lips. The external commissure is raised to form an oval arch; the internal commissure is depressed to form the floor of the threshold of the channel; the orifice resembles in minature the inguinal ring, with its pillars, and the channel, which the eye cannot discern, passes obliquely upwards under the arch. (*Plate XVI, Fig. B*). I believe this condition is one of the first signs of dilatation of the ureter, the orifice assuming this arch-like appearance when the bladder is very full and the pillars are stretched. The appearance changes a little in systole. As the pillars contract prior to the ejection of urine from the ureter the oval assumes a round shape, and the colour becomes a duller red. It is often noted in those cases in which one ureter is giving way under back pressure, or in which there is only one kidney working for the needs of the body. Pathologically it will be found that when one kidney is doing double work its entire ureter is dilated and atonic.

(c,) *The open golf-hole-like ureteric orifice is an indication of a dilated ureter.*—(i) *Non-inflamed.*—In some cases the ureteric orifice will be noticed to be distinctly open. The orifice is round, and the edge thick. The central channel being in shadow will be black, but the lips have disappeared, and the mouth is so obviously open that the cystoscopist can almost hazard a guess as to what sized catheter can enter the orifice without unduly stretching it. (*Plate XVII, Fig. C*). The opening may vary in size from  to , but it is not inflamed. The inference which may be safely drawn is that there is a fair degree of dilatation and atony of that ureter. If the edge of an open ureter is noted to be wavy or crenated in shape, it indicates a high grade of atony, but not necessarily a high grade of dilatation; in fact, the conformation of the ureteric orifice in any case is no guide to the degree of dilatation of the ureter, for that tube may be the size of a child's small intestine, and yet the orifice of the ureter may be only moderately patulous and flaccid.

(ii.) *Inflamed and ulcerated.*—If, however, the edges of the *patulous* “holed” orifice are red, swollen, and excoriated, pyelitis is obviously present, and it may be safely argued that destructive pyelo-nephritis of that side exists in addition to the dilatation and atony of the ureter. Here, again, the appearance of the ureter conveys no knowledge of the amount of destruction which has taken place in the kidney, nor of the working capacity of the gland. Generally such a kidney is useless, and it will not be advisable to leave it. If the orifice is large, and the edge is of a dull white like inlaid wax, whilst the surrounding area is reddened, the operator may expect to find peri-ureteritis, and the ureter to be transformed into a thick cord like a gigantic vas deferens, a condition which is typical of renal tuberculosis.

(d.) *Small, puckered, distorted, warped ureteric orifice.*—Occasionally an orifice will be noticed to be very small and very irregular in outline—perhaps divided by a bridge of tissue into two minute holes. (*Plate XVII, Fig. D*). This is nearly always due to the scarring of pre-existing ulceration, and the ulceration is always the outcome of inflammation of the ureter or pelvis. It might be thought that a small stone lodged at the orifice would cause ulcerative changes and subsequent distortion in the outline of the opening. This is a possible cause, but I have never met with it, for the prolonged retention of stone partly in and partly out of the ureteric orifice is extremely rare. Occasionally the puckered orifice will be red, a sure sign of a recent acute attack of ureteritis or pyelitis. The adhesion of an ulcerated lip may be so extreme as to dam back the urine, and thus lead to one form of so-called cyst of the ureter.

(e.) *Orificial papillomata mark chronic irritating discharges from the ureter.*—Small papillomata or cockscomb warts, in size from that of a pin's head to that of a small pea, are but seldom seen on the lips or edges of the ureteric orifice. When situated at the orifice they are indications of irritation of a severe type in the corresponding ureter or kidney. It is especially important to note this, because the surgeon is apt to consider the hæmorrhage complained of (for there is usually hæmaturia) to be of vesical origin, and advise removal of these sentinel warts. To adopt such a course will only prove disappointing, for the surgeon will be unable to remove such minute patches cleanly. In the first place he will hardly be able to feel them, and if he scrapes the ureteric area haphazardly he will merely inflame, by contiguity, the ureter of the damaged kidney, and consequently

accelerate the disease of which the warts are only the terminal expressions. I have known these sentinel warts to occur in ureteric stone (four instances), in growth of the kidney (two cases), and in chronic interstitial nephritis.

(f.) *Edema of the ureteric orifice is a sign of stone arrested in the termination of the ureter, or of acute descending renal tuberculosis.*—(Edema of the ureteric orifice is a difficult condition to describe, but when seen its character is obvious, and its appearance is not easily forgotten. The actual orifice is undistinguishable; it is lost, buried in a small irregular mound of œdema; and as the light strikes the side of the protuberance the rays trans-illuminate the edge and show its colourless myxomatous aspect to perfection. Here and there fine red striæ mark the position of vascular twigs. Its position, its comparative minuteness, its extreme translucency, the glisten of the œdematous surface, and the fine markings or creases which cover the convex surface, should be sufficient to prevent the cystoscopist from diagnosing villous growth.* The condition is a rare one. I have met with it in descending stone, when the calculus had blocked the vesical section of the ureteric tube, and by its size had interfered with the blood supply. I have also met with it in acute descending renal tuberculosis.

Operative treatment of chronic Bright's Disease.—In last year's *Medical Annual*, a full description was given of Edebohls' operation for the relief and cure of chronic Bright's disease. Without recapitulating the substance of that article, we may remind our readers that this operator first attempted to cure this disease by decapsulating both kidneys in January, 1898. His patient was a single girl, aged twenty, and the operation consisted of exposure of both kidneys, extensive decapsulation, and fixation. The patient has since married, and is now five months pregnant. Frequent examinations of the urine made during the past five years showed in every instance normal conditions, and her general health is excellent.

It is true that surgeons have decapsulated kidneys wittingly and unwittingly for some years (the collater of this article having done the operation in 1892, and frequently since then), but it does not appear that anyone has definitely decapsulated kidneys with a view to cure chronic Bright's disease; in fact some, notably Israel, have emphatically disclaimed any intention or desire to bring about an era of the surgical treatment of this

* I have known cystoscopists fall into this error.

complaint, so that the credit and originality of the innovation rests entirely with Edebohls. In his latest communication⁴ he gives his personal experience of the procedure up to the end of the year 1902. It embraces 51 cases. Of these 29 were females and 22 were males. With the exception of a girl of four and a half years, all the patients were adults. The other extreme of age was represented by a man of sixty-seven, and the average age of the 51 patients was thirty-four years. To limit his experience, however, to his latest series, it may be mentioned that the 32 cases operated upon during 1902, were all cases of far-advanced chronic Bright's disease. In all of them the clinical history, the physical examination of the patient, and the chemical and microscopical examination of the urine, left no room for doubt as to the diagnosis. All of the patients knew that they were the victims of chronic Bright's disease prior to consulting him with a view to operation. While with the great majority of the patients, gradual loss of strength, increasing pallor, uræmic headaches, vascular and digestive disturbances, dropsy and other manifestations of chronic Bright's disease led to medical consultation and the discovery of the kidney affection, quite a number first learned upon application for life insurance that they were the victims of the disease. Others again, more or less suddenly and more or less completely lost their eyesight, and derived their first information of the diseased condition of their kidneys from ophthalmoscopic examination, which disclosed the characteristic lesions of the retina due to chronic nephritis. A few obtained their first knowledge of the existence of chronic Bright's disease in their persons as a result of a sudden attack of paralysis.

Of these 32 cases very few, indeed, were uncomplicated or but slightly complicated cases of chronic Bright's disease. Nearly all presented minor, greater, or extreme cardiac and vascular degenerations: arterio-sclerosis, hypertrophies of all degrees up to the point of non-compensation and beginning predominant dilatation, pericarditis and endocarditis. Pleuritis and hydrothorax as complications were by no means rare, while one patient had cavities in both lungs, and two patients suffered from cirrhosis of the liver, in addition to chronic Bright's disease. The cerebral and ocular complications were represented by hemiplegias due to changes in the cerebral vessels, to embolism, thrombosis, etc., and by the characteristic retinal lesions.

The clinical diagnosis in each case was borne out by the conditions presented by the kidneys at operation, the characteristic

pathological changes due to the presence of chronic Bright's disease being readily and unmistakably appreciable by sight and touch. Occasionally the diagnosis received a rather superfluous corroboration from the microscopical examination of a minute piece of kidney tissue found adherent to the removed capsule proper.

The technique of the operation was detailed in the *Medical Annual* for 1903, and need not be referred to except to point out that both kidneys were operated upon at one sitting, the wounds were closed, and drainage was entirely dispensed with. Perfect primary union took place in all but one of the sixty-four wounds made, and ether proved a satisfactory anæsthetic. In the parenchymatous and diffuse forms of chronic nephritis the capsule is generally separable with ease; it is otherwise in chronic interstitial nephritis. In the latter case the adhesion of the capsule to kidney is frequently very firm, whilst the renal tissues are more or less friable; hence great caution and gentleness are needed during decapsulation, else pieces of renal tissue will be torn away, or the kidney may even be gravely lacerated. Edebohls maintains that renal decapsulation for chronic Bright's disease should for the present, therefore, be undertaken only by surgeons more or less familiar by practical experience with renal surgery in general. Any other course must tend to bring upon the operation unjust and undeserved disrepute.

A study of the phenomena accompanying and demonstrating the progress through improvement to cure after decapsulation of the kidneys for chronic Bright's disease, is exceedingly interesting. The first effect of the operation upon the urine is shown in an increased daily output of urea. Edebohls has known a daily excretion of six grams or less of urea, prior to operation, to be increased to a steady daily output of thirty to thirty-five grams within a month after operation. While the greatest relative gain in the urea output is generally manifested during the first two or three months after operation, the tendency later, although slower in progress and with transient disturbances, is steadily in the direction of a normal daily amount. Of the casts present before operation, those varieties like the waxy, fatty, epithelial, and pus casts, which denote advanced destruction of the secreting structure of the kidney, disappear first from the urine, such disappearances usually requiring from a month to over a year. The next step in the progress towards health is denoted by finding in the urine only granular and hyaline casts

and albumin. The granular and hyaline casts gradually become fewer and fewer, and finally disappear entirely. The albumin in gradually diminishing amounts usually persists in the urine for a greater or less time after the permanent disappearance of all casts. Occasionally the patient passes through a brief period of typical cyclic albuminuria, before the health of the kidneys is finally re-established.

Progressively and coincident with this improvement in the condition of the urine, the patient's general health improves in other respects. Strength returns to the muscles, and colour to the face. The backaches, headaches, and digestive disturbances grow less and less and finally disappear. Unless the cardiac and vascular degenerations have progressed beyond a stage at which a restoration to health or comparative health is still possible, the dyspnœa and circulatory disorders accompanying chronic Bright's disease also improve in varying degree.

One very important question may be asked. Is interstitial nephritis often a unilateral affection? Edebohls contends that in chronic interstitial nephritis the disease may be limited to one kidney. He says, "In the 29 cases of chronic interstitial nephritis the disease was limited to one kidney in no less than nine instances, affecting both kidneys of twenty patients only." These nine cases of unilateral chronic nephritis were detailed in his paper of a year ago, and excited a good deal of surprised comment, and even of incredulity and denial. The contention was made by some clinicians of the highest rank, that chronic Bright's disease is always bilateral. These two different positions and views are not so difficult of reconciliation, says Edebohls, as may appear on the surface. Chronic Bright's disease, *as such and in itself*, rarely or never causes death when limited to one kidney; in fact its unilateral existence, save in very exceptional instances, goes practically undetected during life, unless accidentally revealed either by urinary examination or by the knife of the surgeon. As long as one kidney is healthy and performs its functions, the general health need not suffer to an extent sufficient to induce consultation with a physician, even though the second kidney be seriously diseased. It has been abundantly proved that one-third of the total kidney substance possessed by man is sufficient to sustain life. That the disease in its further development becomes invariably bilateral is probably the truth. Thus while surgeons in their operative work have now and then met the disease in its earlier stages

unilaterally, physicians derive their convictions from the fact that the patient comes under their professional care in the later stages, when the disease has become bilateral, and from the observation that the disease, as found in the dead-house, is practically always bilateral. Bright's disease, like everything else, must have a beginning; that it may make decided progress in one kidney before attacking the other, Edebohls considers proved.

Edebohls' results.—The mortality in the 51 cases he has operated upon was stated to be $13\frac{2}{3}$ per cent, but in judging this death-rate the fact must be taken into consideration that, for one reason or another, Edebohls was compelled to accept cases for operation in which the fatal outcome was an almost foregone conclusion. Patients, as well as their physicians, (both sometimes represented in one person) insisted that inasmuch as the precise limit beyond which operation could no longer avail to improve the condition of their kidneys was as yet unknown, they were entitled to the benefit of the doubt, and requested or even demanded operation. On the grounds of ordinary humanity the request could scarcely be denied; the more so as a number of his patients in whom the chances before operation seemed equally desperate with those of some of the patients who died, had made unexpected and surprisingly good recoveries. Thus it has happened that he has either willingly or unwillingly operated upon every patient who came to him for operation except in two instances. In one of these the day was set for operation; the patient's heart acted so poorly, however, that death on the table seemed inevitable. To the patient's keen disappointment the operation was declared off; that very night, seven hours after the time set for the operation that was to have been, the patient died suddenly of acute dilatation of the heart. A second patient who desired operation, but whom he advised not to undergo it, and who accepted the advice, died two weeks later.

The summary of results of renal decapsulation for chronic Bright's disease in 51 cases, embracing 47 operations upon both kidneys, and four operations on one kidney only, is as follows:—

Seven patients died within seventeen days after operation. Seven patients died at periods after operation varying between two months and eight years, the average period of life after operation being one year and eight months. Two patients do not show improvement satisfactorily in every respect. Twenty-two patients are in various stages of satisfactory improvement

and progress toward health, at periods varying between two months and fifteen months after operation. The urine of several of these is at present free from albumin and casts. They have not, however, passed the probationary period of six months of normal urine, before the expiration of which no patient is entitled to a place on the list of cures. One patient, after a cure extending over a period of four years, again has chronic Bright's disease. One of her kidneys only was operated upon. Nine patients were cured of chronic Bright's disease, and remain cured, at periods after operation varying from one year and nine months to ten years, the average duration of cure being over four years. Three patients disappeared from observation after leaving hospital, and no trace of them can be found.

In advising, says Edebohls, for or against operation in any given case, much will depend upon the general condition of the patient, as ascertained by a searching physical examination. Derangements of the heart and of the vascular system most frequently present problems, the solution of which will influence our advice for or against operation. A certain degree of cardiac hypertrophy and degeneration goes with every case of chronic Bright's disease, and if uncomplicated, or not too greatly complicated by other changes in the heart and vascular system, does not contra-indicate operation. Indeed, renal decapsulation has proved a boon to several patients, not alone in improving the work of their kidneys, but also in secondarily diminishing the cardiac hypertrophy dependent upon chronic Bright's disease. When, however, the cardiac and vascular changes have advanced too far and become too widespread ever to be made good, or even improved, the dangers of the operation itself are so vastly increased, that it is not worth the patient's while to take the risk. Again, a patient with chronic Bright's disease who has passed the age of sixty should always be carefully investigated before an operation is decided upon. The changes produced in the blood-vessels by advancing years, added to those the result of chronic Bright's disease, constitute a serious handicap for the patient. Age, however, is a relative matter, and a man of seventy may have a younger heart and younger blood vessels, in fact may *be* younger, than another of fifty or, for that matter, of forty years. A more extended experience, however, is necessary before we can decide positively, in every case, whether the patient may hope for cure or improvement from operation, or whether he must be abandoned to his fate.

Operative treatment of acute Unilateral Pyelo-nephritis (hæmatogenous and urogenous).—This subject is probably of more practical value and interest to the surgeon than the treatment of chronic Bright's disease, and it is of growing importance. In 1901, Israel said "Cases of pyelo-nephritis have up to the present been the object of surgical interference only when they have led to the formation of pyo-nephrosis, or to the suppuration of hydro-nephrosis. On the other hand, it has been believed that nothing further need be expected from surgical interference in those cases in which the disease has gone the length of producing scattered miliary abscesses throughout the kidney without evidence of retention. Against such forms nephrotomy appears powerless, while nephrectomy, on account of the bilateral distribution of the disease in the majority of cases, is unjustifiable." Israel related nine cases of suppurative pyelo-nephritis (four hæmatogenous, five ascending) in which he had successfully performed nephrectomy seven times, partial nephrectomy once, and nephrotomy once. He concluded as follows: "Not only may a pyelo-nephritis leading to grave general infection be confined to one kidney, and therefore removed with success, but also conservative operations, such as nephrotomy and partial nephrectomy, must, on the ground of my experience, find a place in the therapy of pyelo-nephritic cases, since by nephrotomy I have been able not only to bring about complete recovery in kidneys which were riddled with miliary abscesses, but also to remove promptly the total suppression of urinary secretion."⁵

Similar opinions have been expressed by other surgeons, and by the literature it appears that out of 23 cases, 18 recovered, and in only two of the five fatal cases was the untoward result due to the operation. (Pousson.) It is now recognized that the disease is often ascending and unilateral. The diagnosis is established by the history of the case, the presence of renal pain, tenderness and swelling, and the high fever. Nephrotomy is the operation of choice, and the pelvis ought to be drained.

My own experience is limited to the ascending unilateral pyelo-nephritis, of which I have had five cases, and lost one by nephrectomy in 1894. Latterly I have treated the kidney by nephrotomy and drainage, and this without the knowledge of Israel, Albarran, and Pousson's work on the subject.

REFERENCES.—¹*Boston Med. and Surg. Jour.* Dec. 1902; ²Cathcart, *Scot. Med. and Surg. Jour.* Feb. 1903; ³*Ureteric Meatoscopy in obscure diseases of the Kidney.* Churchill, 1903; ⁴*Med. Rec.* March 28, 1903; ⁵*Pract.* June 1903.

KNEE, (Surgery of).*Priestley Leech, M.D., F.R.C.S.*

Dislocation.—Ruptured Crucial Ligaments.—Mayo Robson¹ reports a case of ruptured crucial ligaments which were successfully repaired by suture. The patient was a miner, aged forty-one, and the injury was caused by his being almost buried by a fall of earth. Nine months later the leg was useless; the tibia fell backwards until stopped by the ligamentum patellæ, and by manipulation the head of the tibia could be brought forwards in front of the femur, there being also free lateral movement of the head of the tibia on the femur, and some fluid was present in the joint. The knee-joint was opened by a semi-lunar incision across the joint; the synovial membrane was inflamed, and there was excess of fluid in the joint. Both crucial ligaments were found to be completely torn from their upper attachments. The anterior one was stitched to the synovial membrane and tissues on the inner side of the external condyle, and the posterior, which was too short and was split in order to lengthen it, was fixed by sutures to the synovial membrane and cartilage on the outer side of the inner condyle. Plaster was kept on for a month, and movement was gradually obtained under massage. Six years later the patient could walk without a limp, and even run.

Excision.—G. Marion² describes an operation for excising the knee-joint, which avoids as far as possible the chance of infecting the tissues from the diseased joint. The technique is as follows: An incision is made commencing laterally an inch or more above the internal condyle; it passes well below the tubercle of the tibia to a corresponding point on the external surface of the thigh. The ligamentum patellæ is divided about half an inch above the tubercle, and the incision extended along the lateral fascial expansions. The periosteum of the tibia just above the tubercle is divided horizontally, and this serves as a valuable landmark with regard to the level to which the dissection of the soft parts from the popliteal space should be made before section of the tibia. The quadriceps is divided by a curved incision above the patella until the plane between the muscle and the synovial pouch is reached; the muscle is then separated from the diseased synovial pouch, and the synovial pouch is separated from the anterior surface of the femur. The femur is divided by a narrow saw with a movable back so as to leave a V-shaped end, the soft parts in the popliteal space being protected by a flat retractor passed behind the bone. The section of the femur is made anteriorly at the upper level of the

synovial pouch. The vessels and nerves are easily separated with the fingers; laterally the muscles are cut long for fear of wounding the joint. The lower portion of the femur is thus drawn forwards, and the dissection is continued to the level of the horizontal cut first made in the periosteum of the tibia above the tubercle. The tibia is then divided so that its upper end is shaped like an inverted Λ so as to fit into the cut end of the femur. No bone sutures are used; the soft parts are carefully sutured, especially the ligamentum patellæ to the quadriceps; a drainage tube is passed into the popliteal space; and the limb dressed and put on a splint.

REFERENCE.—¹*Brit. Med. Jour.* Dec. 6, 1902; ²*Arch. Gen. de Méd.* Feb. 17, 1903, *Brit. Med. Jour.* March 21, 1903.

LABOUR, (Complications of). *Arthur E. Giles, M.D., F.R.C.S.*

Placenta Prævia.—Dorman¹ gives statistics of 11,200 deliveries at the Sloane Maternity Hospital, among which were 84 cases of placenta prævia, or 1 in 133 $\frac{1}{3}$ deliveries. As Dorman points out, this ratio simply shows the high proportion of operative cases in an emergency obstetrical hospital; and is of no value for comparison with a general outside service.

The maternal mortality of the placenta prævia cases was 12 per cent (10 cases.)

Of the ten deaths, four of the women were moribund on admission, and died the same day shortly after delivery, from loss of blood and shock. In three others death was caused by a rupture of the lower uterine segment, and the shock, together with the hæmorrhage, was the cause. One case was complicated with eclampsia. Two patients died of sepsis—one after rupture of the uterus. The foetal mortality was 45 per cent still-born, and 12 per cent dying within the first two weeks of birth.

The complications of placenta prævia, says Dorman, are numerous. Malpresentations and malpositions are so frequent that one should be on the look-out for them. In eighty-four cases fifty-six were vertex, ten were breech, eighteen transverse, and one face. The low placenta forcing the head away from the pelvic brim is the cause of this complication. Prolapse of the cord occurred in 26 per cent of these cases. Anomalies in the shape of the placenta are common. As a result of a previous endometritis, the placenta was adherent in 13 per cent.

Postpartum hæmorrhage is often seen, but prompt action should prevent much loss of blood in this way. The hæmorrhage is usually from the uterine atony, due to the extreme anæmia,

but is sometimes from the extensive cervical lacerations, even from rupture of the lower uterine segment. Sepsis is a very frequent sequence. The patient's power of resistance is diminished by her anæmia; the placental wound is at the cervix, and therefore relatively nearer infection; the poor contraction of the uterus and the slow involution in the puerperium predispose to sepsis; and the operative delivery causes a greater liability to infection.

TREATMENT.—This, as Dorman points out, must vary widely according to the indications. When there is no active bleeding to call for prompt interference, labour should be induced,

Expectant treatment is permissible only before the seventh month. If there is little loss of blood, one may wait until the time of complete viability of the child, *i.e.*, until after the seventh month. Fatal cases before that period are practically unheard of. The induction of labour may be by a tight vaginal tampon, or if the placenta is not completely covering the os, by the introduction of a bougie. Best of all is the introduction of the Champetier de Ribes' ballon. One rule is not to leave the patient until she is delivered; and another never to allow a patient with placenta prævia to go on in pregnancy beyond the seventh month, remembering that at any time hæmorrhage may come on and the patient may die before the doctor can be secured.

If the cervix is partly dilated a podalic or pelvic version may be performed by the external or bipolar method, and a foot secured and brought down until the half breech tightly fills the cervix. The external version in many of these cases ought to be possible, because of the motility of the head above the pelvic brim. When the breech has been brought to present, then by a quick rupture of the membranes or boring through the placenta, the foot can be secured and brought down with a minimum loss of blood. The external version should more often be employed in cases of this sort.

If the cervix is fairly dilated or dilatable, the hand should be carried in to the uterus and the fœtus turned by podalic version. The completion of the dilatation is then left to the uterine pains, or, in the interest of the mother or child, may be effected by breech extraction by intermittent tractions on the leg. Should the placenta be partial or marginal, we may sometimes, if there be fair cervical dilatation, succeed in stopping the flow by rupturing the membranes, and thus permit the head to descend

and exert pressure. The use of forceps in such cases as these is justifiable.

The prevention of postpartum hæmorrhage is possible by use of the hot intra-uterine douche, which should always be in readiness; or prompt tamponade if the uterus does not quickly react to the douche. After delivery it is sometimes necessary to employ vigorous methods to combat shock—free stimulation, heat externally, elevation of the foot of the table or bed, saline enemata, hypodermoclysis, or the saline intravenous infusion.

The treatment of the subsequent anæmia is important. **Saline Enemata** of a pint each may be given every two hours until the fluid bulk of the blood is restored. Small doses of **Morphine** may be needed for the extreme restlessness. As soon as the stomach will tolerate it, fluid diet should be given, and a liberal nourishing diet in a short time. Some easily digestible form of **Iron** should be exhibited early.

Premature Separation of a normally situated Placenta ("Accidental Hæmorrhage").—Ross² gives particulars of 34 cases occurring among 8621 deliveries in the service of St. Mary's Hospital, Manchester. The etiology of the condition is now, he says, fairly well ascertained. The patients are usually well advanced in their child-bearing history; the average age of patients was 31, and their average number of children was 7; there were only 2 primiparæ: one of these had albuminuria, and the other had severe syphilis.

Nephritis is regarded by practically all authorities as an important factor. Ross refers to the excellent study of the morbid anatomy of the condition by Von Weiss, who demonstrated various inflammatory changes, not only in the foetal adnexa, but, in two fatal cases, in the muscular wall of the uterus itself. This "myometritis" is of the greatest interest, as it explains the great difficulty experienced in inducing the uterine muscle to retract and contract satisfactorily in these cases.

As to symptoms, in the gravest cases, says Ross, we usually get the history that the patient, being in the last months of pregnancy, has felt suddenly faint, and has had a sensation of something giving way internally. She commonly vomits, and on being put to bed gradually develops a dull aching pain in the abdomen; there may, or may not, be a discharge of blood *per vaginam*, though it is rare to meet with a case which runs its whole course without some external hæmorrhage. On examination the uterus is found too large for the period of

pregnancy, and feels stretched and boggy—it is also distinctly tender on palpation—the foetal parts are not to be felt. *Per vaginam*, the os is usually undilated and, in his cases, it was very rigid, though Dr. Jardine states that it is soft and dilatable. Other types occur, but are not usually so dangerous or so difficult to deal with.

The general condition is, of course, that of acute anæmia ; there is also a large element of *shock*. He lays stress on this, as he thinks that some cases which at first strike one as very severe, and as having bled internally to a degree almost necessarily fatal, will, if not too energetically dealt with, rally sufficiently to be safely delivered. The diagnosis can usually only be confounded with placenta prævia, or ruptured uterus, both of which can be readily set aside. There is, however, one case on record where it was mistaken for rupture of an advanced ectopic gestation.

Ross summarises his observations under the head of treatment, as follows :—

“ Vaginal plugging for premature separation of the normally situated placenta is on its trial, but the results so far obtained are encouraging. Early puncture of the membrane is not the panacea which it is so frequently stated to be ; and frequently forces one on to rapid delivery, a procedure which largely accounts, I think, for the present high mortality rate. To a few cases, probably, a Porro offers practically the only chance, and the attempt to supply its place by *accouchement forcé* is the cause of frequent disaster.”

Occipito-posterior Presentations —Pritchard³ recommends the following plan, which he has successfully adopted in 35 cases. The patient is anæsthetised and the exact position noted ; the head is then grasped in the right hand and rotated, so that the occiput is brought under the symphysis pubis, or even slightly further round, if there is any tendency to assume the old position on withdrawing the hand. Ordinary forceps are now used and the head delivered. This is a simple manœuvre where the head is small. There are, however, occasionally cases where the pelvis is not large enough ; in these the head, grasped in the right hand, is pushed up into the upper portion of the pelvis, or into the abdomen, and rotated at or above the brim of the pelvis, forceps being immediately applied.

The chief advantages of the hand over forceps are that it causes less damage to the soft parts of the mother ; the hand

is better able to appreciate the turning movement of the shoulders of the child, thus there is less danger to the neck of the child; the hand is able to push the head up into the abdomen, which we cannot do with short forceps; and, lastly, our hands are always with us.

Dystocia due to Uterine Fibroids.—Kempe⁴ records a case of this kind successfully treated by Cæsarean section, and Chipman⁵ relates two cases treated by Cæsarean hysterectomy, *i.e.*, Cæsarean section followed by removal of the uterus.

Laceration of the Vagina during labour.—Kaufman⁶ has collected 82 cases of this serious complication.

The prognosis for the child being in any event exceedingly bad in these cases, if laceration happens before the termination of labour, the patient must be delivered as rapidly as possible, no attention being paid to the life of the child; hence, craniotomy or any other method of delivery which will subject the mother to the least violence should be chosen. Perforation of the after-coming head should be employed if the slightest difficulty arises in its delivery. Usually the forceps can be employed to advantage when the head is presenting. As regards the treatment of the complication, a certain number of cases where the uterus is involved will require abdominal section, with or without removal of the uterus. If the vagina only is involved, the rent should be closed by suture if it can be reached, otherwise tamponade and gauze drainage will be best.

Rupture of the Uterus.—Toth⁷ reports three cases of ruptured uterus successfully treated by tampon. In one case recovery was uneventful; in another peritonitis came on, followed by an abdominal abscess and subsequent hernia at the site of the abscess. In the third case the patient, after the application of the tampon, was sent to a lying-in hospital, where the uterus was removed entire. Kleinertz⁸ records a remarkable case of spontaneous rupture of the uterus at the beginning of labour. Fifteen hours after the rupture abdominal section was performed, and the child was found completely outside the uterus, the placenta presenting through a rent in the anterior uterine wall. After their removal a laceration was found to extend from the middle of the left wall of the uterus to the internal os. From the lower end of this vertical rent a second ran obliquely across the anterior wall to the right angle of the uterus. The edges of the anterior laceration were smooth as though cut with a knife, but those of the other were ragged. The left uterine artery

was unsupported, as though it had been dissected out of the parametrium, but otherwise it was uninjured. There was but little blood in the peritoneal cavity. The uterus was removed, and the patient recovered.

Donald and Walls⁹ report a remarkable case of spontaneous rupture of a uterus bicornis during the ninth month of pregnancy. The rent occurred between the two horns of the uterus. Panhysterectomy was performed, and the patient recovered.

REFERENCES.—¹*Med. Rec.*, Aug. 30, 1902; ²*Scott. Med. & Surg. Jour.*, May, 1903; ³*Brit. Med. Jour.*, April 11, 1903; ⁴*Ibid.*; ⁵*Montreal Med. Jour.*, April, 1903; ⁶*Arch. f. Gyn.*, vol. 63, part 1, 1903; ⁷*Cent. f. Gyn.*, No. 6, 1903; ⁸*Ibid.*, Oct. 4, 1902; ⁹*Pract.*, Feb. 1903.

LARYNX, (Diseases of).

H. Lambert Lack, M.D., F.R.C.S.

Acute Laryngitis in Singers.—Holbrook Curtis¹ states that an acute catarrh of the larynx is almost invariably associated with slight paresis of some of the laryngeal muscles, and especially of the thyro-arytenoidei. The *sine qua non* of treatment is absolute silence, or a tone whispered from the lips, with no laryngeal quality in the voice. This must be enjoined until the sound, written *humph*, may be made without effort through the nose, the mouth being closed. Then we commence vocal exercises, using words like *ming*, *mong*, *ding*, *dong*, *maw*, *mow*, etc., as an adjunct to treatment; for the thyro-arytenoids and other affected muscles have then lost their paresis, if it existed, and regained their tonicity. The instant innervation is re-established we may commence muscular exercises to overcome the slight infiltration which is present. Internally from the first we exhibit **Strychnia**, and apply static or faradic **Electricity** along the course of the recurrent laryngeal nerves. Of greatest value in this stage is the use of **Adrenalin Chloride Solution** sprayed into the larynx, before doing the tone exercises.

While we are carefully exercising the sluggish intrinsic muscles by using with the nasal attack, words beginning with the labial consonants, as exemplified by humming the word *ming*, it is well to alternate the work by giving a **Massage** to either side of the trachea and thyroid, as well as under the ramus and angle of the jaw. The latter is performed by standing in front of the patient, separating the first and second fingers, applying them over the region of the inferior maxillary glands, and making rapid backward and forward movements, pressure being directed upward and inward. The trachea and laryngeal massage is done upward and downward with the thumb and two fingers.

A **Cold Pack** is then applied to the throat, and the pyriform sinuses are swabbed with **Tincture of Iodine** and **Glycerin** in equal portions, to stimulate the nerves and produce a counter-irritation without the vocal larynx. This method of procedure will quickly abort a commencing laryngitis. Of course attention must be paid to nutrition and elimination, and the respired air must be cool and pure.

Inhaling Powders into the Larynx.—Dundas Grant² describes a glass tube, about a quarter of an inch in diameter and ten inches in length. The proximal extremity, which is passed into the back of the patient's throat, is bent downwards at a right angle for about half an inch. The distal extremity is bent downwards at an obtuse angle for three inches, and its orifice is placed in a small heap of powder in a watch glass. The patient closing his lips on the tube, draws the powder up and into the larynx by a sharp inspiration. Grant recommends the insufflation by this method of a powder consisting of one part of **Resorcin** and two of **Orthoform** in tuberculous laryngitis.

Papilloma of the Larynx.—Dundas Grant³ showed a patient twenty-two years of age with congenital papilloma of the larynx. She had had tracheotomy performed at the age of four months, and had worn a tube continuously ever since. The case shows the uselessness of tracheotomy as a curative measure for papillomata of the larynx, as recommended by Hunter McKenzie. Grant removed the growth and subsequently the tube.

Tuberculosis.—Levy⁴ discusses the effect of high altitudes in the climatic treatment of laryngeal tuberculosis. Contrary to the generally received idea, he considers that high altitudes retard the development of laryngeal tubercle. His experience especially applies to the high lands of Colorado.

Sharp⁵ states that during the last decade the treatment of laryngeal tuberculosis has undergone a great change. The local treatment of the disease has given way to non-interference, and it is to be hoped that this policy of leaving the larynx alone will continue. Many a poor sufferer has been hastened into eternity by active over-zealous local medication. Specialists forget that the patient suffers also with a tuberculous lesion of the lung, for a primary tuberculosis of the larynx does not exist.

He divides tuberculosis of the larynx into two main classes : (1) Cases where the ulceration is confined to the true cords, the ventricular bands and inter-arytenoid commissure, without infiltration of the surrounding structures ; (2) Cases with ulcera-

tion of the arytenoids, aryepiglottic folds, cords and ventricular bands, with infiltration, or infiltration without ulceration. In the first class, with limited ulceration without infiltration, with little pulmonary involvement, with little digestive disturbance, when the patient can tolerate large doses of **Creosote**, the chance of recovery is good. With cases coming under the second division, the only chance is immediate removal to a high altitude and dry climate, unless there is an excessive ulceration and infiltration, when the patient will die in from three to six months, and it is folly to send him away from home. These cases he would treat with sufficient morphine to keep them comfortable and quiet the cough. When giving creosote Sharp pushes it to large doses. He prefers beechwood creosote, and increases the dose rapidly up to thirty drops, four times a day, or in extreme cases to fifty drops four times a day. In one case a hundred drops of creosote three times a day were taken for five weeks. The only results of this large dose were smoky urine and anæmia, which disappeared as soon as the medicine was discontinued.

Freytag⁶ says that of twenty-eight cases which he was able to follow to the end, all terminated fatally. Still much can be done for the local condition, both palliatively and curatively. The pain, hoarseness, and difficulty in swallowing can be relieved, and at times the process in the larynx can be healed. He condemns external operations, but recommends endo-laryngeal interference in exceptional circumstances, where there is good general nutrition, little lung affection, and limited local disease. Tumours may be removed by snaring or cutting forceps, and a limited ulceration curetted. In most cases of ulceration he recommends the application of **Lactic Acid** (50 per cent) to be well rubbed in by means of a pledget of wool on a sponge holder. The acid acts only on the diseased surface. If there be infiltration the curette should first be used. When pain is present, he strongly recommends **Orthoform**, either in powder as an insufflation, or as a 10 per cent solution to be applied locally.

These views represent the average present day opinion. There is no doubt that for the majority of cases modern **Sanatorium Treatment** offers the best hope of cure. Operative interference has been greatly overdone, and its value over-estimated in recent years. But it would be a great pity if the pendulum were allowed to swing too far backwards. The application of lactic acid and other caustics has a place in the therapeutics of tuberculous laryngitis, being especially useful in cases of limited

ulceration without infiltration. The curette may be recommended as the first step in similar localised cases, and where only slight infiltration is present. Complete excision of the epiglottis is also useful in dysphagia due to disease of the epiglottis. (*See below.*)

Cancer of the Larynx.—Glück (Berlin),⁷ states that in some of his operations for the eradication of cancer in this region he has successfully extirpated the pharynx, larynx, œsophagus, the entire thyroid gland, the vagus nerve, the cervical portion of the carotid and jugular vessels, and has obtained cures of two and a half years' duration. To prevent the common occurrence of septic broncho-pneumonia he performed the prophylactic resection of the trachea, by which a wall of tissue was interposed between the cavity and wound of the operation and the lungs. In hemi-laryngectomy, laryngotomy, and total extirpation of the epiglottis, a plastic operation based on the same principles was performed. After healing of the wound the patients could swallow like normal individuals. As to the results obtained from the various operations, in four cases the vocal cords had been extirpated by thyrotomy, the patients remaining well for six months, and two and a half and three and a half years respectively. Hemi-laryngectomy had been performed in thirty-five cases, with only three deaths, one of which was independent of the operation. In twenty-two cases of total extirpation there had been only one death, which was due to iodoform poisoning. Of twenty-seven transverse extirpations of larynx and pharynx, mostly with glandular extirpation also, there had been only one death.

These results, compared with previous series of cases, mark brilliant progress. The operation lengthened life, and even if relapses occurred in the more desperate cases, the end was less painful to the patients. Glück stated that some of his patients had survived the operation eleven, eight, six and a half, five and a half, four and a half, and three and a half years in full health, and others had died from illnesses quite apart from any recurrence of the disease.

X-rays.—The **X-rays** have been used in at least three cases of inoperable laryngeal cancer. Bryson-Delavan⁸ tried the effect in a case of a large mass in the larynx, infiltrating the posterior commissure, with extensive glandular affection. After eighteen exposures, there appeared to be no doubt that the mass became smaller and softer, and the entire contour of

the growth changed. Treatment had to be abandoned, however, owing to the condition of the patient's kidneys, from which he died shortly afterwards.

Casselberry⁹ states that one case made remarkable improvement in eight weeks, and Clarke reported a further case, in which three applications removed the pain, but the patient was too feeble to come for further treatment. Scheppegrell¹⁰ reports the only successful case. The patient showed a typical cancerous mass in the larynx. The growth was ulcerated; the glands were not involved. Operation being refused, the X-ray treatment was carried out. The entire tumour disappeared, and the patient, three months later, still showed no evidence of recurrence. His voice had improved so much that he was able to resume his practice at law. As there was no microscopical examination made in this case, the diagnosis of cancer is, perhaps open to question, although the clinical appearances were characteristic, and Scheppegrell himself does not consider it in doubt.

Removal of the Epiglottis.—It has long been known that the epiglottis is not necessary for swallowing; and that throughout the entire movement of deglutition it plays a purely passive part. In fact the removal of the diseased epiglottis has been frequently undertaken to facilitate swallowing. Lake has reported several cases in which he has removed the tuberculous epiglottis with the galvanic snare, with great relief to dysphagia. This observation the author has frequently had occasion to repeat. In the majority of cases the operation is only a palliative proceeding, but inasmuch as it frees the patient from his most distressing symptoms, relieves the constant pain in the throat and the distressing dysphagia, and enables proper and sufficient food to be taken, it is often, in connection with proper open air and constitutional treatment, of the greatest value as an adjunct in the cure of these cases. Furniss Potter¹¹ and Herbert Tilley¹² have even employed the operation in two cases of malignant disease. Projecting portions of the growth were nibbled away with cutting forceps, and although of course such a proceeding cannot alter the ultimate result, it is well worth employing, as it frees the sufferer from much pain and promotes euthanasia.

Myles¹³ states that the operation is easily done under cocaine anæsthesia, and that there is practically an absence of pain. All the operations that he had seen done in this region under general anæsthesia had been more difficult. Chappell¹⁴ stated that he

had removed two-thirds of an epiglottis with a sarcoma attached eight years previously. He had used the snare, after a preliminary tracheotomy. The case had been completely successful.

Chambers¹⁵ reports a case of lupus of the epiglottis, which had been successfully removed.

Bronchoscopy.—Killian¹⁶ has introduced an expansion of the method of direct laryngoscopy, by means of which he is enabled to examine the trachea, bronchi, and œsophagus. It is doubtful if this method can ever come into general use, on account of the amount of practice and manipulative dexterity required, and the special appliances necessary, and above all the great amount of discomfort caused to the patients, very few of whom are likely to tolerate it. The apparatus consists of a long straight tube attached to a handle, the interior of which is illuminated by a small electric lamp. The tubes vary in length and calibre to suit the situations to be inspected. Killian states that it is sufficient to apply cocaine locally, or occasionally to give a hypodermic injection of morphia in a nervous patient, with the exception of children, in whom it is better to administer chloroform. The patient may sit upright, or, if an anæsthetic be employed, be placed in the horizontal position with the head well over the end of the table. The tube should be introduced through the mouth, or more easily still, through a tracheotomy wound. By these means, the œsophagus, trachea, and even the sub-divisions of the bronchi, may be thoroughly explored, and foreign bodies, etc., can be detected and removed. Killian has introduced a number of fine forceps, probes, etc., for these purposes.

REFERENCES.—¹*Laryngoscope*, March, 1903; ²*Jour. Laryng.* Dec. 1902; ³*Ibid.*; ⁴*New York Med. Jour.* Nov. 1, 1902; ⁵*Ibid.*, Feb. 7, 1903; ⁶*Münch. Med. Woch.* May 13, 1902, *Brit. Med. Jour.* July 19, 1902; ⁷*Lancet*, Aug. 15, 1903; ⁸*Med. Rec.* Oct. 18, 1902; ⁹*Ibid.*, July 19, 1902; ¹⁰*New York Med. Jour.* Dec. 6, 1902, *Jour. Laryng.* Feb. 1903; ¹¹*Laryngoscope*, Feb. 1903; ¹²*Ibid.*; ¹³*Ibid.*, Jan. 1903; ¹⁴*Ibid.*; ¹⁵*Ibid.*, Feb. 1903; ¹⁶*Brit. Med. Jour.* Aug. 28, 1902.

LATHYRISM.

James Cantlie, M.B., F.R.C.S.

The subject of lathyrism is at the present time being investigated on behalf of the Indian Government by Major Andrew Buchanan, I.M.S. It is wise that the nature of this ailment should be fully investigated, seeing that, although the disease is not fatal, the paralysis which it produces is incurable, and the victims are therefore a burden to the State. If it is true that the consumption of the common pulse—*lathyrus sativus*—is the

cause of this formidable and permanent paralysis, it is time its cultivation in India was prohibited by law. At the present moment 358,000 acres in the Central Provinces are under lathyrus cultivation, and the possibility of lathyrism arising therefrom is a serious matter.

Hendley¹ gives a graphic account of an outbreak of lathyrism in a village in India, and discusses several of the opinions held as regards the etiology of the disease. He maintains that, although lathyrism is in some way due to lathyrus poisoning, this presumably only predisposes to the ailment, and that exposure to wet and cold are required to excite the seizure. In this way, also, he attempts to explain the fact that men are more prone to the disease than women, in the proportion of 10 to 1; men being employed in the fields, are exposed more to wet and cold than women.

The pathological observations recorded are various. Some assert that there is no change in the spinal cord; others state that (in animals) "the mischief was found mainly in the cells of the anterior horns of the cord, which were diminished in number and atrophied." Changes in the walls of the smaller arteries of the cord, and even thrombosis of these vessels, have been noted, suggesting, as in ergotism, that the nerve changes may be secondary to the vascular lesions.

REFERENCE.—¹*Brit. Med. Jour.* Sept. 26, 1903; *Jour. Trop. Med.* Nov. 2, 1903.

LEPROSY.

James Cantlie, M.B., F.R.C.S.

Although a great deal has been said and written about leprosy during the year 1903, no new fact has been proved. Mr. Jonathan Hutchinson's¹ expeditions to South Africa and to India stimulated inquiry into the etiology and contagious nature of the disease, but he has raised in every direction a storm of adverse criticism to the tainted-fish theory. A few facts are in favour of this mode of transmission, but the bulk of evidence is against it. He does not regard leprosy as contagious in the ordinary sense of the word, but the disease might be, he thinks, conveyed by food handled by lepers, a method of communication he proposes to call "commensal." He therefore would debar lepers touching articles of food to be consumed by others. In his opinion, however, neither hereditary transmission nor personal communication play any large share in the production of leprosy, and he regards most cases of leprosy as arising *de novo*, that is, independently of contact with other people, but caused by some article of food.

Mr. Hutchinson's fish hypothesis of leprosy suggests that either the bacillus itself may infest fish in certain conditions of partial decomposition, or that some element may be generated in connection with such fish which may excite the bacillus of tubercle when already present, to new modes of development. In leprosy countries it is amongst the people on the coasts where the disease is most rife. In Roman Catholic communities leprosy is more prevalent than amongst people of other religions by whom fish is not eaten as part of the religious observances. Mr. Hutchinson quotes the Jains and high-caste Brahmins in India as being almost free from leprosy, and draws attention to the fact that they are strict vegetarians. He contends that the fish theory explains (1) The antiquity of leprosy; (2) The wide-spread prevalence of the disease; (3) Its local distribution; (4) Its prevalence in Roman Catholic communities; (5) The disappearance of the disease with the advance of civilisation; and (6) The absence of the disease in Mid-Russia. Mr. Hutchinson's belief that leprosy is not contagious, leads him to denounce leper asylums, and say that the "overweening confidence in scientific dogma becomes the parent of cruel injustice and the cause of untold wretchedness."

Tonkin,² from observations in the Sudan, found (1) That males were attacked in the proportion of 56·81 per cent, to 43·18 of females; (2) That the age at which leprosy chiefly appears is between the years of six and of twenty; (3) Leprosy cannot be looked upon as incurable; the deformities it causes remain, but many Sudanese lepers outlive the effects of the disease; (4) In only about 10 per cent of lepers can a hereditary influence be traced. (5) Fish is consumed to but a small extent, for the reason that in the Sudan fish is dearer than meat. (6) Salt throughout the country is scarce and dear. (7) In the Central Sudan the most frequently determining factor in the incidence of leprosy is a badly balanced, and therefore inefficient diet.

Delin³ holds that leprosy is contagious, and cites instances in support of his belief. He states that in Riga, von Bergmann found 60 per cent of 106 cases of leprosy occurred in persons who had lived at some time in close contact with lepers. Amongst these it was not a question of heredity, but merely contact. In a workhouse in Riga 4 persons were admitted with leprosy, and 19 of the inmates subsequently developed the disease; in 9 of these cases the disease developed in persons whose neighbour in the next bed was a leper. In his

article Delin states that, in Norway, Lochk and Hansen hold that while tubercular leprosy is contagious, the anæsthetic form is not, or only rarely so.

Alfonso⁴ finds that leprosy is not highly contagious, and that the treatment consists of proper food and hygienic measures. **Tannic Acid**, beginning with 8 grains daily and increasing to 60 grains, did good in combination with hot baths of fifteen minutes duration at bedtime. Tubercles yield to the thermo-cautery and to the application of **Tincture of Iodine**; **Oil of Chaulmoogra**, administered internally is serviceable; and ointments of **Ichthyol**, **Salol**, or **Iodoform** applied to the ulcers induced healing.

Savill⁵ describes a case of leprosy in a boy of sixteen, in which **Chaulmoogra Oil** (oleum gynocardiæ) did good. He administered the drug in 4 min. doses in capsules thrice daily, beginning in August, 1899; the dose was increased, and in May, 1900, he gave 50 capsules *per diem*. When last reported upon the patient was still taking 20 capsules daily.

Valin⁶ reports two cases of leprosy which, he considers, prove the contagiousness and the curability of the disease. A Syrian boy arrived in Montreal in December, 1899, and a few months later developed leprosy. Two years after the boy's arrival, his father, who lived with him, became a leper. **Chaulmoogra Oil** was given the boy, and in two months a notable improvement was observable. In eighteen months a complete cure seemed to have been accomplished. It is interesting to note that the father had been in Canada nine years before becoming leprosy.

REFERENCES.—¹*Brit. Med. Jour.*, Sept. 26, 1903; ²*Lancet*, April 18, 1903; ³*Roussky Vrach*, Sept. 21, 1902; *Brit. Med. Jour.*, Nov. 8, 1902; ⁴*Rev. Med. Cubana*, March 1, 1903; *New York Med. Jour.*, April 25, 1903; ⁵*Lancet*, Nov. 1, 1902; ⁶*L'Union Méd. du Canada*; *Med. Rec.*, Dec. 13, 1902.

LEUCOCYTOSIS. (See "Blood.")

LEUKÆMIA.

T. N. Kelynack, M.D., M.R.C.P.

Much activity has been manifest in the publication of results of numerous investigations regarding the blood changes in the various forms of leukæmia, which, however, while giving greater precision to our knowledge of the pathological features, throw but little light on the etiology of the obscure conditions grouped under this term. It is mainly to researches directly the outcome of Ehrlich's introduction of micro-chemical methods in the study of blood, that we have been able to discover that leukæmia consists of at least two definitely distinct and separate forms:

one arising (as it is commonly held) from derangement of the bone-marrow, and the other from disease of the lymph glands; and, at all events for the present, myelogenous and lymphatic leukæmia are best considered as quite distinct affections.

The so-called acute form of leukæmia is almost invariably of the lymphatic type, but Dorothy M. Reed,¹ in publishing the result of an investigation of a fatal case of acute lymphatic leukæmia, discusses the various views as to the origin of the lymphocytes, holding that acute leukæmia, whether lymphoid or myelocytic, may be due to changes in the bone-marrow, the other hæmopoëtic organs being involved, if at all, secondarily; and finally concludes that we should recognize three forms of leukæmia, all due to myelogenous changes, and well termed myelocytic, lymphoid, and mixed-celled, if we wish to make the blood picture the basis for clinical division; any of these three forms may be acute or chronic; the myelocytic is usually chronic, and the lymphoid usually acute.

Charles E. Simon² records an exceptional case of myelogenous leukæmia in which comparatively low leucocyte counts obtained during the greater period of the disease, while there was a practical absence of eosinophiles; which is remarkable in view of Ehrlich's emphatic and frequently repeated statement that the absolute number of the polynuclear eosinophiles is invariably increased in myelogenous leukæmia.

W. K. Hunter³ has described the case of a youth of nineteen, where acute lymphatic leukæmia ran its course in three months.

R. Wilkinson⁴ records a case where the myelocytæmia appeared towards the end of life to change its type to that of a lymphocytæmia. E. Barié and Salmon⁵ have recorded a fatal case of rapid formation of a huge hæmatoma in a leukæmic man of thirty-five. Debove⁶ has well figured the chief characters of the blood cells in myelogenic leukæmia.

REFERENCES.—¹*Amer. Jour. Med. Sci.* Oct. 1902; ²*Ibid*, June, 1903; ³*Lancet*, July 18, 1903; ⁴*Ibid*, June 20, 1903; ⁵*Ibid*, March 28, 1903; ⁶*Arch. Gen. de Méd.* July, 1903.

LICHEN PLANUS.

Norman Walker, M.D.

Whitfield¹ reports a case in a woman where an extensive eruption of this kind was accompanied by vesicles and bullæ upon the legs and feet. Investigating similar cases, he finds that out of 17 nine had never had arsenic, so that this cannot be taken as the cause of the bullæ.

Saalfeld² has had good results with the **Cacodylates** of iron

and sodium in this disease. He uses a 5 per cent solution, and gives 10 to 20 drops per dose.

Gaucher³ recommends sedative applications in the acute cases, such as a powder of 10 per cent **Powdered Camphor** in talc. Internally he prefers **Bromides** or extract of **Valerian**.

REFERENCES.—¹*Brit. Jour. of Derm.* May, 1902; ²*Therap. Monats.* June, 1901; ³*New York Med. Jour.* March 21, 1903.

LIVER, (Acute Yellow Atrophy of). *Robt. Hutchison, M.D.*

Ballin¹ reports a case of this disease ending in recovery. The patient was a brass-worker, twenty years of age, who was operated upon for an acute appendicitis. The appendix, cæcum, and omentum were inflamed and swollen. For three days after the operation everything went well except for slight jaundice. On the fourth night delirium set in, followed by spasms and coma. The patient was deeply jaundiced, there was copious hæmatemesis, bile, albumin, and casts appeared in the urine, along with crystals of leucin and tyrosin, and the hepatic dulness was much diminished. After lasting for five days this serious condition was followed by slow improvement and finally by recovery.

This case adds another to the few instances of recovery in this disease. Weising collected sixteen instances in which the termination was favourable, but the mortality as a whole is about 95 per cent. The author has collected nine cases in which, as in the above, the disease set in after an operation, and discusses the relation between operation and acute yellow liver atrophy as follows :—

“As to the etiology of this serious degenerative process in the liver after operations, there is as much disagreement as on the etiology of acute yellow atrophy in general. Some believe it to be of toxic origin; others, of infectious nature. Bandler, Bastianelli, Marten, and Cohn consider the chloroform used in narcosis to be the cause. Mintz found bacterium coli in the affected liver, and thrombotic processes in the duodenal arteries, and believes, therefore, in infectious origin. The advocates of the theory that chloroform causes the degenerative process in the liver bring forward many arguments in favour of their opinion. But looking over the history we find that in every case an inflammatory condition existed at the time of operation (abscess, appendicitis, torsion of pedicle, etc.) There is no record of any case after an operation in healthy tissue. This leads to the supposition that infection, furthermore, the handling of inflamed intestines and omentum, is also an important factor. Finally,

we must not overlook the fact that some disposition lessening the resistance of the liver cells, as alcoholism, lead or catarrhal jaundice, was recorded in nearly every case. Considering this, it seems probable that acute yellow atrophy of the liver after operation, is caused by infectious processes, with the help of the toxic influence of chloroform upon the liver. A predisposition by alcohol, etc., as mentioned, seems to be essential as causative factor; however, more observations are needed to clear this etiology. For instance, if some one could report a similar case after ether inhalation, we would have to abandon the idea of chloroform being a causative factor."

He attributes the successful result in his case to the effect of **Venesection**, followed by intravenous **Saline Solution**. This produced diuresis and a copious bile-stained perspiration, which, he believes, helped to eliminate the poisons which resulted from the "hepatic insufficiency."

MacCallum² describes the regenerative changes in the liver after acute yellow atrophy, as exemplified in a case which came under his own observation, and summarises the views of others. The paper is well illustrated and provided with a good bibliography.

REFERENCES.—*Ann. Surg.* March, 1902; ²*Johns Hopkins Hosp. Reports*, 1902.

LIVER, (Cirrhosis of the).

Robt. Hutchison, M.D.

ETIOLOGY.—Hale White,¹ in an address on "Some Misconceptions with regard to Diseases of the Liver," denies that the common form of cirrhosis has any other known cause than the abuse of alcoholic drinks. He says alcoholic *drinks* advisedly, for he does not regard it as proved that the *alcohol* which such drinks contain is their only injurious constituent. Syphilis does not produce ordinary cirrhosis, but a special and easily recognized form of fibrous induration; nor is malaria (he believes) ever a cause of cirrhosis pure and simple. The other alleged causes often mentioned in papers and text-books (see *Medical Annual* for last year) may produce some increase in the interstitial tissue of the liver, but never true cirrhosis. He admits that experimental ligation of the bile ducts may produce cirrhosis, but quotes the statistics of Ford, who was only able to find thirteen cases in adults reported between the years 1882 and 1900, in whom cirrhosis was associated with biliary obstruction.

Putting aside Hanot's cirrhosis, which is very rare, he draws no sharp line of distinction between the hypertrophic and

atrophic forms of the disease, but believes that the liver begins by being enlarged and ends by becoming atrophied. He denies that ascites and jaundice associated with cirrhosis are due to obstruction of the portal vein and bile ducts by the overgrowth of fibrous tissue, but assigns the former to a co-existing peritonitis in most cases, and regards the jaundice as probably toxic in origin. He concludes as follows: "What I have tried, however imperfectly, to put before you with regard to the disease under consideration is this—that we must regard the disease we call alcoholic cirrhosis not as a local disease of the liver, any more than granular disease of the kidney is a local disease of the kidney; for mere increase of fibrous tissue in the liver—as, for example, that which we see in the big bands of syphilis—will not produce the symptoms which we are accustomed to see associated with the disease, any more than heart disease causing an increase of fibrous tissue in the kidney leads to the symptoms of Bright's disease. Both in the disease of the liver and the disease of the kidney, this fibrous change may exist for a long time without symptoms; and in both we must suppose that the chief trouble is not the mere development of the fibrous tissue, but perversion of function, probably a perversion of internal secretion, so that the body gets filled with a toxin, causing in the case of the granular kidney uræmia, œdema, pleuritic effusion, and the many other well-known symptoms of chronic granular kidney; and in alcoholic cirrhosis of the liver the symptoms just mentioned—ascites, jaundice, coma, swelling of the feet, and a tendency to hæmorrhages. If cirrhosis of the liver be regarded in this light, it is brought into line with the fibrous atrophic pancreas, in which, associated with fibrous atrophy, there is such a perversion of internal secretion as to lead to diabetes."

REFERENCE.—¹*Brit. Med. Jour.* March 7, 1903.

LIVER, (Surgery of).

A. W. Mayo Robson, F.R.C.S.

Abscess.—In view of the fact that puncture, as a means of treatment in hepatic suppurations, has almost fallen into disuse, its application being limited almost entirely to diagnostic purposes, the favourable influence of this measure in two cases of hepatic abscess, reported by J. M. Lombana Barreneche,¹ is noteworthy. In both instances, exploratory puncture was made with the view of a subsequent radical operation. Improvement following the puncture, other operative procedures were

abandoned, and resorption of the pus and complete recovery followed in both cases. The author advances the theory that the excitation of the hepatic cells by puncture awakened the dormant defensive powers; and that an active phagocytosis was also produced by this measure.

Manson's trocar and cannula for the treatment of hepatic abscess is favourably reported of by Dr. Alexander Turnbull.² By this means a drainage tube of size sufficient to fill the opening made by the trocar can be readily applied with very little fear of leakage, and the operation is attended with much less danger than is the more extensive procedure of hepatectomy.

Some years ago I advocated the use of a stretched drainage tube introduced through a trocar, and gave an illustration of it in the *Medical Annual*. It is most useful in draining a parenchymatous organ where the patient is too ill to bear a prolonged operation.

Mendes³ has described what he calls a new procedure for exposing an abscess on the top of the liver. He exposes by a rectangular flap the lower ribs, and resects portion of the seventh, eighth and ninth, thus getting a free opening. The pleura is then lifted up, or if opened it is sutured. We, and doubtless many other surgeons, have employed a modification of this method for years, and can speak well of its utility.

Hepatoptosis is not a favourable condition for operation, and is generally better treated by a well-fitting belt. Carstens⁴ has written an article on the subject advocating its treatment by hepatopexy. A. F. Jones has performed the fixation of the gall bladder to the abdominal wall to act as a support to a prolapsed liver.

Grafting of Hydatids during Operation.—Devé⁵ has drawn attention to this danger, and suggests that the cavity from which hydatid cysts have been removed should be irrigated with a 1 in 1,000 perchloride of mercury, or 1 in 200 formalin solution, which he says will effectually kill any hydatid elements left.

Syphilis of the Liver has been treated surgically by C. G. Cumston,⁶ who points out the desirability of exploring doubtful cases which are often diagnosed as malignant, whereas they are curable by general and surgical measures. He relates several cases. The symptoms of gummata are those of other hepatic tumours.

Hepatectomy for tumour of the liver is becoming more and more an established operation. I have operated personally in 13

cases, with 11 recoveries, and can point to two patients in good health several years after the removal of malignant tumours. A case of Schroeder's is mentioned by McKay⁷ in which the patient was well seven years after the removal of a malignant tumour of the liver.

A large number of cases of partial hepatectomy have been recorded. Seventy-six were collected by Dr. W. W. Keen, in 1899, but many have been performed since. The operation may be done in several ways :—

(1.) Fixing the tumour outside the abdomen and gradually removing it.

(2.) Removing the tumour at the operation, controlling the hæmorrhage by a temporary elastic ligature, and then fixing the stump to the wound.

(3.) Removing the growth by slow excision by the cautery, or by enucleation, or by excising a wedge, the hæmorrhage being controlled by ligatures and packing.

(4.) The "ideal operation," in which the tumour is removed, hæmorrhage completely controlled and the abdominal wound closed, is available in cases where the growth is pedunculated and the tissue fairly fibrous.

(5.) Fixing the tumour outside the abdomen by transfixing the base with hysterectomy pins and encircling the mass by an elastic ligature.

(6.) McKay describes a method of interlacing ligatures, which he thinks would be effective.

Carl Beck removed an enormous adeno-angioma from the liver of a young man. Half this tumour was removed at once, and the rest sloughed off—probably two-thirds of the liver were removed; the remaining portion was enlarging, "so that it may yet give good hepatic formation."

Dr. Koslenko⁸ says that from experiments made on animals, Professor Sneguirew's steam "saw" offers a safe hæmostatic measure for operating on parenchymatous organs. In the case of the liver, no secondary hæmorrhage follows, and the hepatic wound heals by granulation, with a subsequent growth of abundant connective tissue.

REFERENCES.—¹*Revista Med. de Bogota*, vol. xxiii. No. 296; *New York Med. Jour.*, Jan. 24, 1903; ²*Brit. Med. Jour.*, Feb. 21, 1903; ³*Rev. de Chir.*, No. 6, 1903; ⁴*Jour. Amer. Med. Assoc.*, May 17, 1902; ⁵*Rev. de Chir.*, 1902, vol. xxv, p. 533; ⁶*Ann. Surg.*, May, 1903; ⁷*Austr. Med. Gaz.*, Jan. 20, 1902; ⁸*Centr. f. Chir.*, May 3, 1902.

LOCOMOTOR ATAXIA.*Purves Stewart, M.A., M.D.*

In well-established cases of *tabes dorsalis*, the diagnosis, as a rule, presents no difficulties. It is in the early stages, where the clinical picture is incomplete, that errors are most liable to be made. Harris¹ states that amongst the objective diagnostic symptoms one of the commonest and earliest to appear is a zone of analgesia on the chest, usually from the second rib nearly to the umbilicus, with or without a strip along the inner border of the forearm and hand. (*See Figs. 14, 15, reproduced from The Practitioner*). This band of thoracic analgesia is useful in distinguishing *tabes* from cerebro-spinal syphilis, and from peripheral neuritis.



Fig. 14—A common type of analgesia in early *tabes*.—(Harris).

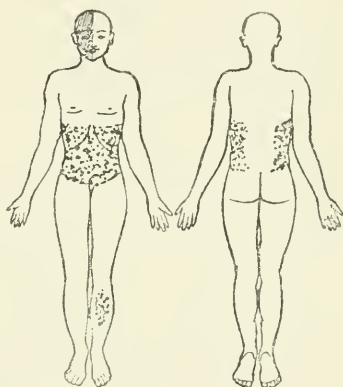


Fig. 15—Anæsthesia of right fifth nerve; partial analgesia on abdomen and leg.—(Harris).

The diseases most likely to be mistaken for early *tabes* are cerebro-spinal syphilis, general paralysis, peripheral neuritis and syringomyelia. The Argyll-Robertson pupil (reflex iredoplegia) is never met with in *syringomyelia*, whilst a degree of scoliosis which is the rule in *syringomyelia* is not produced by *tabes*. In the diagnosis between *tabes* and *peripheral neuritis*, the occurrence of bladder trouble, especially absence of desire to micturate and hesitation during the act, will decide against peripheral neuritis.

Many cases of *tabes* are diagnosed as incipient general paralysis, on account of exaggeration of the deep reflexes. Harris maintains that such increase in knee-jerks is inconclusive unless

accompanied by other phenomena, such as slurring articulation, tremor, fits, and mental impairment. It must, however, be remembered that tabes and general paralysis are closely allied, that they are frequently due to a common cause, *viz.*, antecedent syphilis, and that they may co-exist in the same patient. Loss of the light reaction in the pupil is certainly the most constant and suggestive sign of both tabes and of general paralysis.

TREATMENT.—Actual cure of this disease is not to be expected, inasmuch as, by the time we are able with certainty to make the diagnosis, irreparable sclerotic changes are already present. Recently, the value of anti-syphilitic measures has been much discussed, and notably Lemoine² has advocated what he terms the "intensive" mercurial treatment of tabes dorsalis and of general paralysis of the insane, and publishes a number of encouraging results. Daily hypodermic injections of **Benzoate of Mercury** (2 centigrams per dose) were given for periods varying from two weeks to seven months. In other instances the dose was increased to 3 centigrams. Considerable amelioration, mental and physical, is recorded in a certain number of patients, in whom the disease appeared to become arrested. We must not forget, however, the frequency with which spontaneous temporary remissions occur in these diseases. Lemoine himself thinks that the improvement attained is greater in cases of general paralysis than in tabes dorsalis. He admits that only a minority of cases are improved, but considers even this proportion encouraging in a disease usually regarded as incurable. Leredde³ speaks even more decidedly in support of this method of treatment, especially if initiated during the earlier stages of the disease, when, as yet, the morbid process consists largely in vascular alterations and early nutritive nerve-cell changes, and before extensive destruction and sclerosis of nerve tissue has set in.

The symptomatic treatment of tabes dorsalis, however, is of great practical importance, many of the symptoms calling for active interference. For the ataxy, Frenkel's **Re-education Exercises** are to be recommended. Cases for such treatment must, however, be carefully selected, as it is only in those which have ceased to advance rapidly, and have more or less come to a stand-still, that good results are to be looked for. During the exercises, which must be performed under the direction of a skilled observer, it is of supreme importance to avoid fatigue, and the pulse should be carefully watched.

Complicated apparatus is not necessary. Systematic exercises should be temporarily discontinued for several days after severe pains or visceral crises.

For the treatment of *lightning-pains* many drugs have been tried. **Chloride of Aluminium**, first recommended by Gowers, in $\frac{1}{2}$ -grain doses, three times a day after meals, largely diluted, has again been commended by G. Campbell,⁴ who has given this drug for many months at a time without disturbance of digestion. **Santonin** is strongly recommended by Negro⁵ and others, the method being to give a large dose (15 centigrams in three pills of 5 cg. each, at intervals of an hour) in one day, and not to repeat it oftener than four or five times in two or three months. Notable remission of the pain is said to occur very rapidly, sometimes within an hour, and the pains may not reappear for a couple of weeks. One should bear in mind the risk of santonin poisoning, and stop the drug on the first sign of xanthopsia. **Rest** and **Massage** likewise produce considerable alleviation of the pains of tabes.

The gastric and other crises can only be relieved by the hypodermic administration of **Morphine**. There is, however, always a risk of establishing the morphine habit, and it is therefore essential that the drug should not be taken by the patient himself, but should be given by the physician or some one who can control its administration. In laryngeal crises the dyspnoea may be so urgent as to require **Tracheotomy**. Taylor⁶ mentions cases where sudden death occurred during such a crisis.

Cystitis, with its serious attendant danger of secondary kidney affection, must be carefully guarded against by ensuring that the bladder is thoroughly emptied, and that no residual urine is permitted to accumulate. If cystitis has already supervened, it must be promptly dealt with on antiseptic principles, by local irrigation and the administration of urinary antiseptics.

REFERENCES.—¹*Pract.*, Oct., 1902; ²*Le Nord Méd.*, May 15, 1902; ³*Phil. Med. Jour.*, Jan. 10, 1903; ⁴*Med. Rec.*, Feb. 7, 1903; ⁵*L'Echo Méd.*, June 29, 1902; ⁶*Brit. Med. Jour.*, July 19, 1902.

LUMBAR PUNCTURE, as a Diagnostic and Therapeutic Measure.

Purves Stewart, M.A., M.D.

Since Quincke first introduced in 1890 the practice of withdrawal of cerebro-spinal fluid by lumbar puncture, the practical applications of this procedure, originally suggested simply as a means of relieving intra-cranial pressure in acute tuberculous meningitis, have been widely extended. Lumbar puncture is

now employed for two distinct purposes, *viz.*, diagnosis and treatment.

Of all the methods of examination of the fluid, the most valuable is undoubtedly that which takes cognisance of the presence of leucocytes, and, if present, of their type—**Cyto-diagnosis**. (It may be remembered that a similar method can also be applied to pleural effusions). This mode of examination has thrown a flood of light upon our conceptions of tabes and of general paralysis, has shown a fundamental difference between acute and chronic meningeal effusions, has often decided an otherwise doubtful diagnosis, and given valuable indications for treatment. In health, as Sicard, Widal and Ravaut have demonstrated, the cerebro-spinal fluid contains scarcely any cellular elements, no polynuclear leucocytes, and very scanty, small mononuclear cells or lymphocytes. But in certain diseases of the central nervous system and of its pia mater, leucocytes may occur abundantly, of one type or other. In acute microbic affections of the meninges, large *polynuclear leucocytes* are found, whereas in subacute or chronic affections, including tubercle, small mononuclear *lymphocytes* occur. The occurrence of polynuclear leucocytes always indicates some acute infective process in the central nervous system or its meninges, probably because these are the leucocytes of greatest phagocytic energy, and they therefore show themselves at the onset of a bacterial invasion. On the other hand, subacute tuberculous processes or chronic toxic affections, also tabes and general paralysis, give rise to the lymphocytosis which occurs in chronic inflammatory processes. An observation of Widal's,¹ which at first sight seemed to contradict this statement, really corroborates it. A patient during the course of general paralysis developed a polynuclear leucocytosis instead of the usual lymphocytosis, but this was after an apoplectiform attack, and as the congestive symptoms passed off, the ordinary lymphocytosis was again observed. Pighini recalls another fallacy which is worthy of being borne in mind. It has occasionally happened that a tuberculous process has been diagnosed in cases whose subsequent recovery has disproved the diagnosis. But in such cases the cyto-diagnosis has been practiced too late, when the polynuclear cells, which had originally been called forth to meet the initial bacterial invasion, had already fulfilled their function and given place to lymphocytes.

In mental diseases, on the other hand, cytological examination

of the cerebro-spinal fluid yields negative results. In tabes and in general paralysis, as already mentioned, lymphocytosis is the rule; thus of 125 cases of these two diseases, recorded at a meeting of the Neurological Society of Paris, in March, 1903, cytological examination yielded positive results in no fewer than 116. These results, more especially in tabes, go some way to strengthen Nageotte's² recent theory of the pathogenesis of tabes, in which he ascribes the disease to a transverse interstitial neuritis of sensory or motor nerve-roots at their exit from the subarachnoid space, due to a syphilitic meningitis. Nageotte, therefore, in very early cases of the disease, where lumbar puncture shows lymphocytosis, would intervene with antisymphilitic remedies, in the hope of checking the syphilitic meningitis assumed to be its cause.

Cyto-diagnosis has yielded negative results in certain other nervous diseases, *e.g.*, in Friedreich's ataxia, cerebellar hereditary ataxia, multiple sclerosis, syringomyelia, polyneuritis, poliomyelitis, epilepsy, and neurasthenia; whilst positive appearances have been recorded in cases of syphilitic meningo-myelitis, intra-cranial basic exudations, lead paralysis, herpes zoster, and in some cases of chorea. Further observations, however, are still required to establish the precise weight to be attached to these appearances.

As a *therapeutic measure*, lumbar puncture, originally introduced by Quincke for the relief of intra-cranial pressure in tuberculous meningitis, has not, perhaps, fulfilled early expectations; it has been employed in cases of hydrocephalus, but without encouraging results. In certain cases of uræmic convulsions, the abstraction of cerebro-spinal fluid has proved distinctly beneficial, whereas in chorea the results have been contradictory. In some cases of cerebral tumour, lumbar puncture has been employed with the object of diminishing intra-cranial pressure, and thereby palliating such symptoms as headache, vomiting, and optic neuritis; but it is in the various forms of *meningitis*, of whatever nature, that it is of most distinct therapeutic value, producing often a marked diminution in the intra-cranial pressure symptoms. Lumbar puncture is also employed for the purpose of producing cocaine anæsthesia of the spinal cord before operating on the lower limbs or lower part of the trunk. This, however, is a matter more of surgical interest. Certain cases of tetanus have also been treated by means of injections of antitetanic serum into the spinal subarachnoid space, and with encouraging results. Jacob has also proposed

to treat cases of cerebro-spinal meningitis by repeated injections of sterile saline solution.

Enough has been said to show that lumbar puncture is a measure worthy of further study and of more extended observations.

REFERENCES.—¹*Soc. Méd. des Hôp.*, July 4, 1902; ²*La Presse Méd.*, Dec. 10, 1902.

LUNG, (Surgery of).

Priestley Leech, M.D., F.R.C.S.

Koenig¹ discusses the course and treatment of gunshot wounds in the lungs in time of peace. He speaks chiefly of revolver wounds, and in the greater number the bullet was discharged very close to the chest and penetrated the lung and pleura. Emphysema and pneumothorax were common, and hæmorrhage into the cavity of the chest was most constantly met with; very rarely is this hæmorrhage so copious that the patient dies quickly. In the majority of cases the hæmorrhage continues until the second day, and grave symptoms are produced by absorption of the effused blood. At times the breathing is very severe during the first three days, whilst bleeding is going on, and the patient may die at this stage, but it is uncommon. Another danger is infection, and he relates a case where the lung became infected by the pneumococcus from the interior of the bronchi. As regards treatment, it is very rare that one is justified in operating within a short time of the shooting in order to arrest the hæmorrhage. When the distress in respiration increases two or three days later, when the pulse-rate becomes rapid, and when the temperature rises, one should not hesitate to perform thoracotomy. The same applies to a rise of temperature and dyspnœa appearing in a later stage due to pneumococcic or other infection from the bronchi. Thoracotomy may also be done if there is a hæmothorax on the second or third day, but strict aseptic precautions must be observed. When reabsorption is slow one may remove the blood by puncture, and if this proves unavailing (but only then) one is justified in opening the pleura.

Dr. Merrill Ricketts, of Cincinnati, read a paper on "Lung Surgery"² at the Western Surgical and Gynæcological Society. He thinks absorbable ligatures are not to be relied upon, and says silk and silkworm gut sutures may become encysted in the lung and become harmless; the needles employed should be round; the tug and a combination of the tug and tobacco pouch sutures are the most desirable for the lung. Experiments with

the X-rays show that the position of a foreign body in the lung when expanded, is changed when the chest is open and the lung contracts.

Drs. Riesman, Wood, and Pfahler, of Philadelphia,³ report a case of gangrene of the lung following pneumonia, in which an operation was successfully performed. The X-rays were of service; there will be a dark shadow or a light area in the affected portion of the lung, according as the cavity is full or empty. In addition fluoroscopic examination will show a lessened mobility of the diaphragm on the diseased side. Tuffier⁴ advises, when the X-ray findings do not correspond with those of percussion and auscultation, that the latter be neglected and dependence placed on the results of skiagraphy. If the general condition of the patient is bad, resection of a rib may be done under local anæsthesia. Syringing out of the cavity is better omitted, and exploratory puncture should not be done unless operation can be immediately undertaken. Unless the condition of the patient forbids any postponement of the operation, it is better to sew the parietal and visceral layers of the pleura together, if they are not adherent, and open the abscess or gangrenous cavity some forty-eight hours or so later, after adhesions have taken place.

Korticz⁵ reports a case of removal of a portion of a lyddite shell, which had been in the lung for six months before the operation; and Baldwin,⁶ of Columbus, Ohio, reports a case in which he successfully operated where a piece of knife blade had penetrated the lung, and led to wasting, etc. Three radiographs were taken showing anterior, posterior, and lateral views of the blade. The external wound had healed, but a piece of rib was removed, and the blade was found at a finger's depth in the lung. The abscess cavity was drained, and the patient made a complete and prompt recovery.

Eisendrath,⁷ in order to demonstrate the value of surgical interference in pulmonary lesions following pneumonia, collected the records of 93 cases. In 25 cases of acute simple abscess 24 recovered, 1 improved, no deaths. In 28 cases of gangrene, 20 recovered, 2 improved, and 6 died. In 14 cases of chronic simple abscess with bronchiectasis, 6 recovered, 3 improved, and 5 died. In 26 cases of putrid abscess with bronchiectasis, 13 recovered, 4 improved, and 9 died. These cases show a marked improvement in the results obtained, and Eisendrath ascribes the improvement to earlier diagnosis.

O'Connor,⁸ of Buenos Aires, says the Argentine ranks next to Australia in the prevalence of *hydatid disease*. Out of 84 cases operated on during the past eight years, he has had 3 cases of pulmonary hydatid. If rupture of the cyst has not occurred, the signs of the hydatid of lung may be nothing more than a hacking cough, with some localized physical signs which are more or less marked. In this case the diagnosis may be doubtful, and unless it is shown that the X-rays may assist in the diagnosis, the patient had better be told to come again, when a surer diagnosis may be ventured upon. Should, however, the cyst have ruptured, there is a history of a sudden evacuation of a quantity of fluid, followed by frequent, and at times considerable hæmoptysis, and hooklets and bits of necrotic chitinous material found in the sputum may clinch the diagnosis, which would otherwise remain doubtful. The previous history of the patient, as to his residence in countries where hydatids are common, and his close association with dogs, may be a very useful factor in diagnosis. O'Connor does not advise opening the chest on an exploring expedition in doubtful cases. He uses an exploring syringe, and if fluid is found he immediately follows it up by the knife.

His method of procedure is as follows: The patient is placed in the supine position with the affected side well over the table, and two assistants keep him in this position. After washing, etc., an exploring needle is entered into the suspected area, and if fluid enters the syringe, the latter is detached and the needle is utilized as a sound to locate the most superficial portion of the cyst. When this point is decided the needle is withdrawn, and a 4-inch incision is made parallel to the corresponding ribs, a few inches of the ribs are resected, the pleura is opened, and the presenting lung is instantly secured by two good bullet forceps and rapidly drawn into the wound. The bullet forceps are handed to an assistant, whose sole duty is to maintain the lung in position, so that it acts as a cork preventing blood or fluid obtaining entrance into the pleural cavity. The exploring needle is again inserted, and if hydatid fluid is found the knife is entered along the needle, and the left index finger along the back of the knife is pushed into the cyst; the knife is removed, and two sharp hooks are inserted alongside the finger, securing the cyst wall and turning it outwards. With a large fully-curved needle half-a-dozen silkworm gut sutures are applied so as to include the cut edges of the fibro-cyst with some pulmonary

tissue, and passed outwards through the intercostal muscles and the skin, and just as they are being tied the assistant removes the bullet forceps so that the extruding portion of lung may recede. The endocyst is removed by long forceps, a large rubber drain is inserted, and iodoform gauze applied. There is a great tendency to closure of the external wound before the cavity in the lung is obliterated, thus forming a flask-shaped cavity with a small sinus leading to it.

Foreign Bodies in the Bronchi.—In the *Medical Annual* for 1902 (p. 578) Ricard's and Milton's method of removing foreign bodies from the bronchi by the anterior route was described, and it was noted that Quénu suggested the posterior route as preferable to the anterior route, which latter he thinks should be reserved for interventions on the heart and great vessels. The subject is further discussed in an article,⁹ which says that the future mediastinal tracheotomy will in all probability combine the following steps: (a) The sternal resection of Ricard; (b) The exposure of the trachea by the pushing back of the pleura and the holding aside by retractors of the great retro-sternal vessels; (c) The lifting up of the trachea by traction from above through a hook inserted into the old tracheal opening in the neck; (d) The incision into the trachea just above its bifurcation; (e) The exploration of the bronchi through the wound, the detection and removal of the foreign body; (f) Tamponade of the anterior mediastinum, with the external wound left widely open to afford unrestricted exit of wound discharges; (g) Later secondary suture or healing by granulation as the case may require.

Although several cases of foreign bodies have been reported, most have been removed through the usual tracheotomy wound low down in the neck. Dr. Grant Andrew¹⁰ reports a case of a squeaker such as is used in indiarubber dolls, inhaled by a boy fifteen years of age. An attempt to remove it through a cervical tracheotomy failed, and the patient became worse, with mucopurulent expectoration and signs of septic poisoning. He removed two inches or more from the third, fourth, fifth, and sixth ribs between the base of the scapula and the vertebral column. On opening the pleural cavity the lung was blown against the opening with every inspiration and sucked up into the upper third of the chest cavity with every expiration. The great difficulty was to fix the lung; it was partly fixed with plugs of gauze, but every now and then a fit of coughing would supervene, which did not facilitate matters. The squeaker

could not be felt, although it had been seen with the X-rays. The patient recovered, put on flesh, and lost his cough, but the squeaker could not be seen by skiagraphy, nor had it been coughed up or swallowed, so far as could be ascertained. The greatest difficulty that Dr. Grant Andrew encountered was the constant movement of the lung; gauze packing steadied it sufficiently to palpate the bronchus, but not sufficiently so to have enabled him to incise the bronchus and remove the foreign body if it had been felt. He suggests the best plan for this would be to remove a portion of another rib and insert one's hand into the pleural cavity, and fix the root of the lung by the hand.

REFERENCES.—¹*Berl. klin. Woch.*, *Brit. Med. Jour.* Aug. 29, 1903; ²*Med. Rec.* Jan. 17, 1903; ³*Amer. Jour. of Med. Sci.* June, 1903; ⁴*Rev. de Chir.* Aug. 1901; ⁵*Ann. of Surg.* July, 1902; ⁶*Ibid*, May, 1903; ⁷*Phil. Med. Jour.* Nov. 9, 1901; ⁸*Lancet*, May 23, 1903; ⁹*Ann. Surg.* Feb. 1903; ¹⁰*Lancet*, May 9, 1903.

LUPUS ERYTHEMATOSUS.

Norman Walker, M.D.

Galloway¹ regards this condition as caused by a toxæmia produced by pyogenic microbes, and in the same lecture rejects all causal relationship to tuberculosis.

Pernet² records an interesting case in a plumber, aged eighteen, where the disease began on the face and then spread to arms, chest, abdomen, and legs. The treatment consisted of 15 grs. **Salicin** t.i.d., and a saline aperient in the morning. In four days there was marked improvement, and after about a month the only traces were slight, dusky patches on the cheeks and very little on the body.

Warde³ again expresses his views as to this disease not being a distinct pathological entity, but merely an instance of a common process visible elsewhere on mucous membranes.

REFERENCES.—¹*Brit. Jour. of Derm.* July, 1903; ²*Ibid*, Nov. 1902; ³*Ibid*, Oct. and Dec. 1902.

MALARIA.

James Cantlie, M.B., F.R.C.S.

Beyond a few confirmatory observations concerning the mosquito malaria theory, and some variations in methods of staining the malarial parasite, there have been but few additions to our knowledge.

The disappearance of malaria from districts where anopheles are plentiful and infected persons many, remains a problem which requires further elucidation. In certain parts of Tuscany malaria has disappeared, although both the above conditions were at one time plentiful. We have a similar state of affairs

in Holland, in France, and in the Lincolnshire Fens. How the drainage of a country in which the people are infected and anopheles continue, affects the life of the parasite, strikes at the root of the extra-corporeal life of the malarial parasite. That it has a phase of existence independent of men and mosquitoes, would thereby seem proved; but it may be that the drainage of the soil has so thinned the number of mosquitoes that infection is mild and the power of resistance of the human organism is increased by the improved health which good drainage affords. Johnson¹ describes a sporozoan parasite—a gregarine—of anopheles attached to the outer surface of the stomach of the mosquito. This parasite might be mistaken for the malarial parasite, and it requires close and expert observation to diagnose the one from the other. The gregarine, however, possesses but a single nucleus, whereas in the oöcyst stage of the malarial parasite the nuclei are many. Johnson found the gregarine parasite in 8 per cent of the female *anopheles maculipennis* in Massachusetts, U.S.A.

Nomenclature.—Bruce² suggests for the three well-recognized species of malaria the following nomenclature:—

Malarial Fever.—Synonyms: Ague, intermittent and remittent fevers.

(a), Tertian synonyms: *Hæmamoeba vivax*, simple or benign tertian.

(b,) Quartan synonyms: *Hæmamoeba golgii*.

(c,) Crescent tertian synonyms: *Laverania laverani*, æstivo-autumnal fever, malignant tertian, tropical tertian, remittent fever.

He omits the terms simple, benign, malignant, and pernicious, as they are misleading. Koch's term "tropical tertian" for crescent tertian forms is not applicable in all cases, as the disease occurs in temperate climates. Bruce suggests that the chronic form of malaria, when the parasites have disappeared from the blood, but the anæmia, pigmentation, enlarged spleen, etc., remain, should be styled "chronic malaria," synonym, "malarial cachexia."

Williamson³ considers the name "crescent tertian" is hardly comprehensive enough for the third form of malaria, in which the true quotidian fever is so commonly found; the term "tertian" occurring in two out of the three names might be found misleading. He also adds, in criticising Bruce's nomenclature, that the name æstivo-autumnal is most suitable for

Cyprus, as it is said to be for Italy ; but the objection that it is the summer-autumn fever only in countries bordering on the Mediterranean makes it unsuitable for general use.

Moore,⁴ whilst examining the blood of an æstivo-autumnal fever patient, observed four active flagella protrude from an infected cell. One of these freed itself, and after several efforts entered a granular body having a wreath-like arrangement of its pigment. The ring shape of the pigment soon changed. He observed another of the flagella attempt to enter the same body, but after ineffectual efforts fail to do so. The significance of the last observation may be that the already impregnated parasite may reject in some way another male organism. This phenomenon, although merely a confirmation of MacCallum's well-known observation made in 1898, concerning the behaviour of the flagella, has been so seldom actually seen that Moore's testimony is welcome.

Ronald Ross⁵ describes a method of obtaining transparency of a thick layer of blood by dissolving out the hæmoglobin. In this manner there is much more chance of getting parasites in the specimen when there are but few in the blood, and thereby saving time and perhaps securing a diagnosis, when by a hasty search of a number of thin layers the parasites might be missed altogether. Ross's plan is as follows: A large drop of blood, say, 20 cubic millimetres, is taken up on the slide or cover-glass and is slightly spread out over an area which can be covered by an ordinary cover-glass. The specimen is dried naturally or with slight heat over a flame. On the thick, dried specimen is dropped an aqueous eosin solution (as in Romanowsky's method) and allowed to remain for about a quarter of an hour. As the film of blood has not been fixed, the solution of eosin withdraws the hæmoglobin from the dried corpuscles, and will stain the stromata of the corpuscles, the leucocytes, the blood plates, and parasites. The eosin solution is now washed off very gently by a stream of water, and a weak solution of the (Romanowsky) methylene blue solution is placed on the film, where it is allowed to remain for a few seconds, so that too deep a stain is avoided. The blue is washed off very gently by a stream of water, when the preparation is dried and mounted in Canada balsam. If parasites are present they will be seen scattered over the field as small blue rings with a deep crimson dot (the nucleus) within or upon the ring. In specimens not over-stained the pigment of the parasites will also be visible.

Delany,⁶ working upon the lines adopted by Leonard Rogers, conducted blood examinations to test the value of the increased or diminished numbers of the polynuclear, lymphocyte, large mononuclear, eosinophile, and myelocyte cells in blood, as a means of recognizing the presence or absence of malarial infection. He employed a Thoma-Zeiss hæmocytometer for enumerating the red blood corpuscles. The white cells he estimated in any given field after ascertaining the cubic contents of the space beneath the field of the microscope. The nuclei of the white cells are rapidly stained by Ehrlich's hæmotoxylin. In a series of cases examined an excessive percentage of large mononuclear cells was found, and fixing the limit as 12 (Rogers) a large mononuclear percentage over this figure is diagnostic of malaria. Of 57 cases of malaria remittents in which counts were made, 83 per cent gave the 12 per cent large mononuclear count. Seeing that the percentage of success in finding malarial parasites at a single examination is but 17 per cent, there is no question of the superiority of the white blood cell over the parasitic test. In addition to (a) an increase of these large mononuclear cells in malaria, (b) the lymphocytes are increased in number: taking the normal percentage as 20 to 30, they often run in malaria to 60 per cent or over; (c) the total white blood corpuscle count is diminished: to such an extent may this be the case that in place of the normal 1 white to 600 red corpuscles, the proportion may be from 1 to 1,000 to 1 to 7,140 or more; (d) myelocytes are frequently present to an appreciable extent; (e) the red blood corpuscles are diminished, but not to the same extent as the white; (f) hæmoglobin shows less diminution than the red cells in anæmic cases, so that the colour index is usually above 1.

The Cutaneous manifestations of Malaria are mentioned by Vaccari.⁷ In three cases reported upon the cutaneous eruption coincided with the fever, and was cured by **Quinine**. In a fourth case he noted urticaria as an accompaniment of malaria, the skin affection and the fever disappearing at the same time under treatment. The cutaneous lesions observed consisted in wheals of varying sizes, of irregular shape, sometimes confluent, of a uniform pink colour but becoming white on pressure, slightly elevated, and diffused over the entire body, especially over the forearms and the legs. The face was free, and the eruption did not itch. The appearance of these lesions was more like that of erythematous patches, and the absence of itching made the application of the term "malarial urticaria" impossible. Of

the theories advanced in connection with this subject, the majority of observers favour the theory of Larredde, that they are due to toxins and not to angio-neurosis. The most marked eruptions are met with in the most severe cases of malaria.

TREATMENT.—The use of **Hypodermic Injections of Quinine** in small doses is advocated by Condon.⁸ He uses hydrochlorate or the acid hydrobromate of quinine in 1 gr. or 2 gr. doses on three or four successive mornings, and the site for injection he prefers is the subcutaneous tissue over the splenic area. After three injections in this site Condon, if the treatment has to be continued, chooses the right flank or the upper arm. In 76 cases thus treated he found three doses were all that were necessary; in 14 cases four doses were required. Crystallisation of the quinine salt was avoided by boiling the needle in a test tube before each injection. After use the syringe is kept in a carbolic solution 1 in 40. No abscesses followed the injections.

Welsford⁹ condemns hypodermic injections of quinine, and favours **Intramuscular Injection** into the gluteal muscles. He states that unless strict antiseptic precautions are used abscess is apt to follow. A sterilisable serum syringe should be used, which should be sterilised after each injection. The skin should be cleansed with turpentine and spirit, and 5 grs. to 10 grs. of the **Acid Quinine Hydrochlorate** dissolved in a drachm or less of water, and boiled. The syringe, which before use is washed out with hot water, takes the solution up while hot, and injects it deeply into the gluteal muscles. Finally, the puncture is sealed with collodion, and friction is employed to diffuse the solution.

Clark¹⁰ prefers to give 10 grains of **Quinine Bihydrochloride** by injection into the deltoid muscle, and 5 grains of the same drug by the mouth thrice daily. Smyth¹¹ does not hold with intramuscular injections, but advocates subcutaneous injections of either the **Hydrobromate** or the **Bisulphate of Quinine**; the former drug is the more soluble, but the latter is the more potent. The bisulphate, dissolved in the proportion of 1 grain to 4 minims of warm distilled water, in 5-grain doses is injected beneath the skin of either the arm or flank. Smyth states that subcutaneous injection of quinine is not the marvellous remedy some would have us believe.

Moore and Alison¹² made an extended trial of **Methylene Blue** in malaria. They insist that pure medicinal methylene blue (not methyl blue) be used. As a means of testing the differences between these two drugs in solution, they note that

with sodium hydroxide, methyl blue gives a purplish red reaction, whereas with methylene blue a deep violet colour is obtained. The method of treatment consisted of 20 grains of methylene blue divided into four capsules of 5 grains each. Nutmeg in powder should be administered with the drug to prevent strangury, 5 grains of the nutmeg being given with each 5 grains of the methylene blue. Their conclusions are as follows :—

(1.) Methylene blue will destroy malarial parasites in many cases, but is less certain than quinine.

(2.) Methylene blue is probably most valuable in chronic cases, but has no advantage over quinine.

(3.) The effects of methylene blue are ordinarily more unpleasant than of quinine.

(4.) It is useful in cases that cannot take quinine on account of some idiosyncrasy to it. Its use in cases of pregnancy is undetermined.

(5.) It is probably valuable in treating hæmaturic and hæmoglobinuric fevers on account of its diuretic action ; this has yet to be determined. The authors have had no chance to test its use in such cases.

(6.) It is believed that quinine is quicker and much more certain and more reliable than methylene blue.

Cassia Beareana¹³ is a remedy for malaria of which some further evidence has been obtained. In the *Lancet* of Feb. 1st, 1902, Dr. O'Sullivan Beare mentioned the drug as a native remedy in America. So far, however, the literature of the subject is altogether insufficient to enable a definite conclusion to be arrived at in regard to the real efficacy of this cassia plant in malaria.

King¹⁴ has advanced the theory that the property of *fluorescence* which quinine possesses is probably one of the causes of its ability to destroy the malarial parasite. Considering that malaria is due to the presence of a parasite in the blood, to which it gains access by the bite of the mosquito, this parasite, he contends, seldom develops except in darkness, and it is the red colour of the blood that favours its life, while the violet rays interfere with its evolution : to the fluorescence of quinine he ascribes its power to act as a destroyer of the parasite. King further contends that æsculin and fraxin, the active principles of the horse-chestnut and the ash, give blue rays ; that iodine gives a blue colour with the starchy substances of the blood ; methylene blue causes also a blue colour which is hurtful to the parasite.

King admits that there are certain cases of malaria that resist quinine, but they are cases in which the parasite is undeveloped, and therefore resides in the deep organs of the body. Under these conditions the destructive action of quinine cannot take place, for its fluorescent power is in such instances nearly absent. This is an ingenious theory, and requires and deserves further investigation.

Haller¹⁵ reports a case of ulcer of the larynx which he attributes to malaria, the only justification for so doing evidently being that quinine was given along with a number of other drugs, including iodide of potassium. There was no blood examination made. In malarial countries, or in persons coming from such countries to non-malarial places, the possibility of malaria complicating other illnesses and conditions must ever be kept in mind. Wolf¹⁶ mentions a case of appendicitis in which considerable obscurity prevailed in consequence of malarial complications. Any ailment may be so complicated; the rigors of the malarial attack suggesting the formation of pus or a pyæmic or septicæmic condition. In simple colic from gall-stones, should the cold stage of a malarial attack set in, the diagnosis may be upset and pus in the gall-bladder or even in the liver be simulated. Nothing is more common than to find alarm created in tropical practice after parturition, by the development of signs and symptoms which suggest puerperal complications. The diagnosis, however, need not remain long in doubt, for we have, fortunately, ample means of deciding the point. In the same way malaria may complicate surgical ailments and surgical operations, and with the inexperienced may lead to mistaken diagnosis and considerable harm. It is wise, therefore, as Moore¹⁷ recommends, to examine the blood of every case from a malarial locality before operation.

Gautier¹⁸ has investigated the action of the more recent organic preparations of **Arsenic**—the cacodylates—in malaria. Billet, in Constantine, Africa, used the disodium methyl arseniate hypodermically in doses of 1 to 2 grains, and found in patients that proved refractory to quinine that the results were excellent.

Inhalations of Hydrofluoric Acid were advocated by Oliveri¹⁹ as a means of treating malaria some years ago; and Morgoni recently experimented with this remedy. He diluted and used it with two volumes of water, and gave malaria-infected persons inhalations which lasted about half an hour at a time. Morgoni found the inhalations useful in cases of chronic malaria; as

adjuvants to quinine in acute cases ; and in persons with quinine intolerance.

PROPHYLAXIS.—Ross²⁰ states that the means of arresting the baneful influence of malaria, since we know the etiology of the disease and the means by which it is spread, resolves itself into a question of prophylaxis. Of the means to hand, the mosquito net claims the foremost place, and as useful adjuncts we have punkahs, quinine, and wire-gauze screened windows and doors. Quinine could not be considered a true prophylactic, since it did not prevent the entry of the parasite into the blood, but merely killed or weakened it after it had gained entrance. Separate localities of habitation for whites and natives would no doubt contribute towards protecting the whites, as it is chiefly from native children the disease is acquired ; but such a step is not always possible, and it would not tend to diminish the disease amongst natives, upon whom devolves the manual labour required in the colonies. A great source of ill-health is the ignorance of Europeans in tropical countries, and the neglect of modern scientific teaching ; they regard the malaria mosquito theory and its practical bearing with indifference or even contempt. In several districts, however, intelligent men have secured a triumph over ignorance and improved the health of the colony or city they live in ; notably so has this been the case in Havana, Lagos, Sierra Leone, Hong-kong, Ismaila, Klang in Malay Peninsula, and several other places. The question of the suppression of malaria must be taken up by the local governments of our colonies and dependencies.

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MALINGERING.

Purves Stewart, M.A., M.D.

Hösslin¹ believes that trauma is often taken advantage of by hysterical subjects and others, so that existing complaints are exaggerated, whilst new ones are simulated. The following is a convenient method for the detection of simulation. If the patient states that he has loss of power in a limb, the physician

should make him contract the muscles supposed to be affected, meantime offering a certain amount of resistance, enough to render the movement slower but without making it impossible. In a case of genuine paresis, the antagonistic muscles do not contract, so that if the *resistance is suddenly withdrawn*, the limb moves hurriedly in the direction of the intended movement. But in cases of simulation, the antagonistic muscles are kept contracted, in order to make the effort of movement apparently difficult, so that when the resistance is suddenly removed, the limb flies in the opposite direction. In applying this test, one should never use more force than the patient can overcome.

REFERENCE.—¹*Münch. Med. Woch.*, Sept. 16, 1902; *Brit. Med. Jour.*, Nov. 1, 1902.

MAMMÆ, (Carcinoma of). *Priestley Leech, M.D., F.R.C.S.*

There has been little new with regard to this disease during the last year; no new operative procedures have been suggested, nor have there been any important contributions to the duration of life and the efficacy as regards cure of the more extensive operations practised in the present day. Sir Wm. M. Banks,¹ in a very interesting paper on the history of operations practised for cancer of the breast, proves the old adage that there is nothing new under the sun. Banks does not believe in using a sharp knife in the axilla, nor in removal of the pectoral. Banks's share in the surgery of the breast has not been adequately recognized.

Guleke² presents the statistics of 884 cases of cancer of the breast, and his results are as follows: Adhesion of the breast to the overlying skin occurs 12·15 months after the beginning of the disease; infiltration of the axillary glands in 11·8 months; adhesion to the pectoral fascia in 13·9 months, and ulceration in 16·45 months. Metastases occur most frequently in the liver, then in order of frequency in the other breast, the lungs, pleura, stomach, vertebræ, and sternum. The percentage living and free from evidence of recurrence after three years, is 28·79 per cent.

Mr. Douglas Drew³ advances another argument in favour of removal of the pectorals. He suggests removal of the pectoralis minor at the same time the sternal portion of the pectoralis major is removed: this saves time, and when the pectoralis minor is left the lower border is apt to form a prominent cord of indurated tissue which overhangs the axilla, and which is at times a cause of considerable discomfort to the patient. From his experience he thinks there is little difference in the movements of the arm when the pectorals have been left, and he ascribes

this to the cutting of the nerve supply to the muscles during the operation ; he says he has found it anything but easy to avoid cutting the nerves when clearing out the axilla.

Morestin⁴ reports an interesting case of the occurrence of an epithelioma of the nipple and a glandular carcinoma occurring in the same breast. The patient, a woman of fifty-six, a multipara, came complaining about a very painful intercostal neuralgia. On examination the left nipple was retracted, and when pulled forwards an ulcerated surface the size of the little finger nail could be exposed ; the base was not indurated, nor the surrounding tissue thickened. There was no enlargement of the axillary glands, and after careful and repeated examination no further tumour could be discovered in the mammæ. The breast was removed, and on section a nodule was found about an inch from the ulcerated surface, and separated from it by healthy tissue. Histologically examined, the ulcer was a commencing epithelioma, and the nodule was a glandular carcinoma. The author remarks that if two malignant tumours of different structure can develop at the same time in the same organism, there is no *a priori* reason why two tumours of the same structure should not develop independently of one another.

Crawford Renton⁵ enters a plea for the early removal of doubtful tumours of the breast.

Snow⁶ says the whole subject of cancer is exceedingly complicated, and it is impossible to make an all-inclusive dogmatic statement on any single point connected with it. He does not advocate the removal of the pectorals, but says a very material point in practice is removing the **Single Lymph Gland** upon the upper surface of the axillary vein ; it is situated just below the crossing of the vessels by the pectoralis minor. If not removed, and it subsequently becomes enlarged, it is the cause of the horrible "brawny œdema" so conspicuous in fat subjects. Snow suggests that any palpable "recurrence" in an average case of carcinoma within less than two years after the operation he describes, generally means bad work, and should indicate self-reproach ; but the three-year period of immunity of Volkmann is absurd, as the marrow deposits very commonly make no sign of their presence until the close of that term.

Ozenne⁷ was able to keep 23 cases of cancer of the breast under observation from two to five years. In twelve of these patients, from whom the axillary glands were removed at the same time with the breast, there was recurrence within a year

after operation. He then **refrained from removing the Axillary Glands** in nine subsequent cases, with the result that two patients are now alive four years after operation, and five lived from two to three and a half years. Ozenne thinks that the extensive removal of glands may *favour the spread of the disease* to distant parts of the body.

Willson⁸ reports a case of spontaneous disappearance of a recurrent mammary carcinoma.

As an example of an advanced operation may be quoted a case of Dr. Ellsworth Eliot, jun.,⁹ where eighteen months after removal of a carcinomatous breast, recurrence took place of a mass about the size of a pine-apple, but there were no glands in the axilla. This mass was removed, and the axilla cleared out. The glands, though apparently normal in appearance, on microscopical section showed beginning carcinomatous infiltration. Eighteen months later a second recurrence took place in the form of a small lump; this was excised along with the underlying costal cartilages and parietal pleura. There was no apparent disturbance of either respiration or circulation. The parietal pleura was stitched to the lung, and the external wound was closed. Fourteen months have elapsed without any signs of recurrence.

Wakefield¹⁰ has a good article on "Carcinoma of the Male Breast." He has only been able to find 37 cases since 1890. The percentage compared with the female varied from 1·6 to 8·4. The longest time the tumour had been noticed was thirty-five years, a case reported by Owens and Eisendrath. In 8 cases there was a definite history of trauma some time previous to the appearance of the tumour; 2 cases were apparently caused by the irritation of constant friction. Of the 37 cases 34 were operated on; one was too extensive for removal, and two refused operation. All recovered from the immediate effects of the operation except one old man of ninety-one, who died a few days later from "hypostatic congestion of the lungs." Results as to freedom of recurrence are not given except in a few cases. Wakefield gives the notes of five cases.

Küttner¹¹ publishes a very important paper on the outlook in mammary carcinoma with enlarged supra-clavicular glands, giving the results of operations in cases of carcinoma mammæ where the supra-clavicular glands were enlarged when the patients first came to the surgeon. There has been much discussion whether such cases should be operated on or not; in von Bruns'

clinic operation was done at one time, but the results were so bad that, except as a palliative measure, it is not done now. The material in that hospital is particularly favourable to the solution of this question, as the population is not a floating one, and the cases can be followed up. From 1880 to 1902 54 cases of mammary cancer were operated on, with simultaneous removal of enlarged supra-clavicular glands, and those were the most favourable, as the majority of such advanced cases were sent away. Two cases died in consequence of the operation, and in other eleven cases the supra-clavicular glands were not removed from the axilla, so that it might be objected that the whole of the diseased tissue was not removed. There are thus left 41 cases with a careful anatomical dissection of the supra-clavicular hollow, with or without division of the clavicle, and with free communication between the supra- and infra-clavicular hollows. The further history of these 41 women is known without exception, and all except 3 are dead. Of these three one would probably soon die from local and regionary recurrences; one had lived for five and a half years after operation, but was suffering from inoperable recurrence in the mediastinum; and the third was returned as free from recurrence three years after operation, but so sceptical had Küttner become that on further investigation he found she had not had a mammary carcinoma, but had suffered from an extensive carcinoma of the skin, and the glands removed from the axilla and supra-clavicular fossa were not carcinomatous.

It is noteworthy how many unmarried women suffered from this severe form of breast carcinoma, viz., 20 per cent. In some cases it may be a feeling of shame which keeps a spinster from consulting a medical man, but in the majority the disease presented a very malignant aspect, and in five (out of eight) it occurred under the form of *mastitis carcinomatosa*. Perhaps in an organ whose function has been in abeyance the energy of growth of the cells which are beginning to grow is extraordinarily great. It follows that when the supra-clavicular glands are involved, the disease has already invaded parts which the knife of the surgeon cannot reach, and that division of the clavicle with removal of the glands, as suggested by Halstead, is not a justifiable operation. It may be undertaken in these cases from a humanitarian point of view, but no permanent cure can be looked for.

There have been several papers published on the treatment

of mammary cancer by **Oöphorectomy**, or **Beatson's Operation**. In this connection it must be remembered that cancer is very capricious in its course, and cases have been recorded by Pearce Gould,¹² Butlin,¹³ and others where spontaneous disappearance has occurred quite independently of any treatment.

An analysis of cases in which this operation has been performed is given by Alexis Thomson,¹⁴ As a result the conclusion may be drawn that it would be justifiable to recommend the operation in cases with irremovable recurrences and no metastatic deposits; but not to perform oöphorectomy in place of amputation of the breast and clearing out of the axilla, any beneficial results being transient in the majority of cases.

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MAMMÆ, (Malignant Angioma of).

Priestley Leech, M.D., F.R.C.S.

Brohl¹ publishes a case of this disease with metastases, the patient being a woman, aged twenty-six, who had borne one child six years previously, and had weaned it when three months old. When twenty-three years old a hard lump was detected in the right breast, which was excised by Koetschan, when it was found to be malignant, so a month later he removed the breast and cleared the axilla (Nov., 1899). In Sept., 1900, the patient came under Brohl: her general health was good, but around the cicatrix of the operation were extensive ulcerations involving the greater part of the anterior aspect of the thorax. It was adherent at many points, and surrounded by hard, livid skin. This ulcerated area was excised; the axilla then contained no metastatic deposits. Seven months later, on April 30, 1901, a metastatic tumour was excised from the integuments over the right scapula, and also part of the scar of the last operation. Fresh operations were done three and six months later. The recurrent growths were purple, smooth, fixed, but not much ulcerated, and in histological examination they proved to be angioma malignum. The patient died in March, 1902. The lungs were found to be full of metastatic deposits, purple-coloured, and at some points as large as a pea.

This is the first instance of angioma mammæ with metastases. Eleven cases of this disease were published by G. B. Schmidt ; in all the patient was in robust health. The tumour grew slowly, was painless, and extended freely over the skin, but never caused retraction of the nipple. The axillary glands were sometimes enlarged without showing the structure of the tumour. Recurrence was rapid. These symptoms, and the absence of cachexia as well as pain, distinguished angioma from carcinoma.

REFERENCE.—¹*Monats. f. Geb. u. Gyn.* Sept. 1902 ; *Brit. Med. Jour.* Dec. 6, 1902.

MAMMÆ, (Tuberculosis of). *Priestley Leech, M.D., F.R.C.S.*

This disease is looked upon as being somewhat rare, an opinion evidently shared by Scott Schley. of New York,¹ who reports a case with a review of the literature of the subject. His case was a primary one in a woman thirty-two years of age, who had always been well and strong, had had five children, and had nursed them without trouble, and she seemed an unusually well-nourished woman with good colour of skin and mucous membranes. Examination of the chest revealed nothing. On section the growth very closely resembled a scirrhus carcinoma. Two weeks after the operation the patient was given an injection of 7 milligrams of tuberculin, but showed no reaction. The patient has remained well for over four years since the operation.

Scott-Schley says that of all the neoplasms of the breast reported, scarcely more than 100 have been reported as tuberculous, and if we reject the cases not verified by histological examination or the finding of tubercle bacilli, the number is materially reduced to about 65. In an examination of these 65 the number of cases in which the disease may fairly be regarded as primary in the mammary gland is reduced to about 12, excluding as we must all determinable foci of tubercular disease elsewhere—involvement of axillary and of supra-clavicular glands, visceral infection, bone lesions, etc. These occurred in the large majority of the reported cases in addition to the disease in the breast, and must throw doubt upon that organ as the seat of primary infection in those cases. There were many cases recorded in which the axillary glands alone and of the same side were affected, and it is in this class of case that the most difficulty is experienced in determining the starting point of the disease. A small focus of disease in the breast may be overlooked, and may cause enlarged and suppurating secondary glands in the axilla, which may be taken for the primary or the

sole lesion. On the other hand, the breast may become infected by way of the axillary lymphatics, a point that is made much of by Halstead, Le Conté, Powers, Verneuil, in the collected cases of Berchold, and by Salomoni. And furthermore, the lymphatics from the pleura are believed to play a part as carrier of the infection.

Velpeau, in 1854, distinguished three forms of the disease, disseminated tuberculosis, lymphatic tumours, and lymphatic degeneration; and Dunbar, in 1881, reported two cases and described two forms of the disease—the isolated or disseminated nodular variety, and the confluent. In the first form he regarded the disease as primary in the breast in the majority of cases, and in the latter as secondary to disease in some other part, usually the axillary glands, but it might result from the coalescence of the nodules of the first form. Roux, in 1891, reported a third form of the disease, the intra-glandular cold abscess. Robinson, in 1892, concluded it is not an infection of the gland proper, but first of the connective tissue and later of the gland epithelium, the evidence being in favour of a lymphatic or hæmatogenous origin, rather than a direct infection.

Only eight male cases (three proven) have been reported. It is usually found in the third, fourth, and fifth decades of life, and is more frequently seen after gestation and lactation. The majority of the cases were under thirty-five years of age; the oldest fifty-three, the youngest under one year. In the primary cases the age of the patient and the apparent good health, frequently remarked, are noteworthy. Traumatism has preceded the development of the disease in some cases. The infection must occur: (*a*) Through the ducts of the glands; (*b*) Through a surface wound; (*c*) Through the blood or the lymphatic channels, the generally accepted method; (*d*) Through contiguity of structure, and extension from caries of the ribs or sternum.

The progress of the disease is as a rule slow, except during lactation; affects but one side, rarely both; and the axillary glands are enlarged from tuberculosis or simple hyperplastic inflammation. More rarely they are normal. In few cases is the volume of the mammæ appreciably augmented. The skin is normal, non-adherent, and without fistulæ. Nipple retraction was noted in a moderate number of cases only. Pain is not a constant symptom. In the end nearly all become painful, the breast enlarges, the growth undergoes the usual

degenerative changes characteristic of tuberculous tissue, and abscesses develop and fistulæ form.

In the nodular or discrete form, characterized by its chronic course and painless insidious development, the nodules may be single or multiple. The breast is nearly always unchanged in appearance. The nodules are firm, movable, and distinct, or their outline may be indefinite, merging into the normal gland tissue. They may resemble "lymphatic glands situated on the margin or scattered throughout the breast." These nodules may remain of the same size for years and then advance, or they may steadily increase in size over a long period of time. If single, they are more frequently found in the upper and outer quadrant; if multiple, they may coalesce and form tumours of considerable size before degeneration and suppuration occur, or they may remain distinct and undergo the usual changes, the breast being filled with multiple cavities of cold abscesses.

In the second or confluent form more frequently seen there is a more acute onset and greater enlargement of the breast. Degenerative changes occur, and fistulæ result early, usually in less than a year, and especially in those near the time of lactation, or with the tumour situated near the nipple, when it may be a question rather of weeks.

A single tumour is usually found situated in the outer hemisphere of the enlarged mammary gland. It is an irregular, nodular mass, varying in size from that of a walnut to that of an apple and larger; at first hard, but softening later, and subsequently fluctuating. In this form of the tubercular process masses extending from the breast outwards and as far as the axilla were frequently described, or the breast tumour may be joined to an axillary mass of glands by a band of indurated tissue. In the majority of the cases the axillary glands were enlarged, and in about 75 per cent were tuberculous. In a number the supra-clavicular glands were also enlarged. After suppuration and discharge few show permanent healing; the process extends, and finally involves the thoracic viscera. In this confluent form the breast is firmer than normal, and this firmness is as a solid mass. Sections show an irregular cavity or several cavities usually communicating, filled with turbid serum, detritus, or puriform liquid. The walls are dense, usually roughened, with fringes and villousities, and lined with a soft greyish or purplish membrane. There are fibrous prolongations into the adjacent tissue. The tissue surrounding these cavities

is denser, and shows small, greyish transparent areas, or yellowish, opaque spots, due to the extension and infiltration of the tubercular process.

Roux's third form, the intra-glandular cold abscess, is a terminal product usually of the confluent tuberculosis, and is a slow development. Miliary tuberculosis affecting the breasts has been found at an autopsy.

In some of the recorded cases the earlier symptoms and course of the disease varied from the usual form. In one it began subcutaneously and resembled an ordinary furuncle, the base became indurated and extended, forming a tumour of considerable size. In another case two vesiculated pimples with indurated base first appeared. In another an ulcer appeared near the nipple, and later nodules formed within the breast which were connected to the ulcer by a band of indurated tissue. In another induration began about a sinus the result of a simple mastitis. In three cases retraction of the nipple was the first symptom noted.

The scarcity of the tubercle bacilli in the exudates and tissues is generally remarked. In the earlier stages the diagnosis cannot be made from the clinical symptoms and macroscopic appearance. This is particularly true of the discrete form, if no enlarged glands or signs of tubercle are present. In the majority of cases the diagnosis was not made prior to the operation. The tumour may be mistaken for simple cysts, fibro-adenomata, carcinoma, sarcoma, gummata, actinomycosis, mastitis (especially the chronic interstitial form). Cases of carcinoma and tubercle in the same breast have been reported.

The treatment in primary cases is **removal** of the breast and axillary glands. It is not necessary to include the pectoral muscles. In secondary cases the prognosis and treatment depend on the situation of the primary focus.

Mr. Marmaduke Sheild² reports a case of a tuberculous chronic abscess in the breast in a patient seventy-three years old, which was incised and drained, and healed, and then broke down, when it was scraped and swabbed out with pure carbolic and then healed by granulation after plugging.

REFERENCES.—¹*Ann. Surg.* April, 1903; ²*Clin. Jour.* May 13, 1903.

MARASMUS, (Infantile).

G. F. Still, M.D.

The large majority of cases of so-called infantile marasmus are undoubtedly marasmic simply and solely because they have been ill-fed; not in the sense that there has been any wilful

carelessness in the feeding, but that the food, albeit excellent in character so far as theory is concerned, has nevertheless not been such as the particular infant required. But since the time of Parrot's first description of "Athrepsie" as a distinct disease, it has been customary to recognize this condition as something *sui generis*. Combe and Narbel,¹ of Lausanne, have recently made some observations upon this infantile marasmus, and divide the clinical course of the disease into three stages:—

(1,) A gastro-intestinal stage, in which the symptoms are only those of gastric or intestinal disturbance.

(2,) A "hæmatic" stage, in which changes are occurring in the intestine and subsequently in the blood. The child is thirsty, there is vomiting, the bowels are loose, the stools offensive, with undigested food, the skin is cold and poorly nourished, and may become covered with an erythematous rash or ulcerated around the buttocks. The face assumes the wizened aspect, and sometimes the limbs are œdematous.

(3,) A cachectic stage, in which similar changes, only more marked, are present; the infant is emaciated, the fontanelle depressed, the vomiting and diarrhœa cease, but the stools have a markedly putrefactive odour, the appetite is very poor, the abdomen retracted and flabby.

The blood in these cases is actually thickened; the red corpuscles may number as many as 6,000,000 to the c.mm.; the circulation is therefore difficult; there is abnormally little heat production. There is at the same time an auto-intoxication proceeding, as can be shown from examination of the urine, in which increase of phosphates and chlorides denotes abnormal consumption of tissues, with resulting acid poisoning, and the excess of ammonia has a similar significance. *Post-mortem* extreme degrees of atrophy of the mucosa of the intestine are found, varying in extent according to the duration of the disease.

TREATMENT.—The authors recommend **Irrigation** of stomach and bowels, and administration of antiseptics, such as **Calomel**, or, if diarrhœa is present, **Tannigen**, $2\frac{1}{2}$ grs., or **Dermatol**, 3 grs., or, if the infant is constipated, **Salacetol**, $\frac{3}{4}$ to $1\frac{1}{2}$ grs.

To improve the digestion and stimulate the appetite **Lecithin** has been found most efficient. It is obtained in sealed tubes, and injected every two days into the muscles of the thigh in doses of $15\frac{1}{2}$ grains. Under this treatment the weight increased rapidly. The rationale of this method is to be found in the known control of nutrition by the nervous system. It is

assumed that marasmus may be due to the effect of poisoning the nervous system by the auto-intoxication described above, and if the nutrition of the nervous system itself can be improved the marasmus may be arrested. The importance of phosphorus in the composition of nervous tissues is recognized, and it seemed possible that by administration of phosphorus the desired end might be attained; but phosphorus in sufficient doses has too toxic an action, and therefore the organic compound of phosphorus—lecithin—which is not toxic in any dose, was tried, and has been found effectual. It may be pointed out, however, that lecithin is not necessarily administered by intramuscular or hypodermic injection. It has been given by other observers by the mouth with good results in rickets, and might well be tried in this much more convenient way in marasmus also.

Subcutaneous injections of 100 c.c. of a 1 per cent solution of **Sodium Chloride** or of **Magnesium and Sodium Sulphate**, administered night and morning, were found valuable by Vargas²; while feeding with **Thymus Gland** in increased doses of 1 to 3 grains three times a day is being tried by Stokes, Ruhrah, and Rohrer,³ on the ground that atrophic changes in the thymus, quite different from those found in healthy children, are found in marasmic infants.

REFERENCES.—¹*Arch. de Méd. in Scott. Med. and Surg. Jour.* Nov. 1902; ²*Revist. Med. de Bogota, in Intern. Med. Mag.* Aug. 1902; ³*Amer. Jour. of Med. Sci.* Nov. 1902.

MASTOID DISEASE. (See "Ear, Diseases of.")

MEASLES.

E. W. Goodall, M.D.

Plates XVIII and XIX show the eruption in this disease. In each case the photograph was taken on the second day of the rash, which consists of slightly raised papules and irregularly shaped blotches. The eyes are watery; and all parts, face, trunk and limbs, are involved. *Plate XX* is a coloured representation of the rash at its height. Most of the papules have run together to form blotches, but these blotches are not of a lighter shade in the centre, as is the case in the antitoxin rashes represented in *Plates I and II*.

MECKEL'S DIVERTICULUM (Surgery of).

A. W. Mayo Robson, F.R.C.S.

Persistent omphalomesenteric remains may produce symptoms in a number of ways, depending upon their degree of completeness. Of the pathological conditions arising from these remains, the most important are:—

PLATE XVIII.



Photo. J. Neale.

MEASLES.

Second Day of Rash.

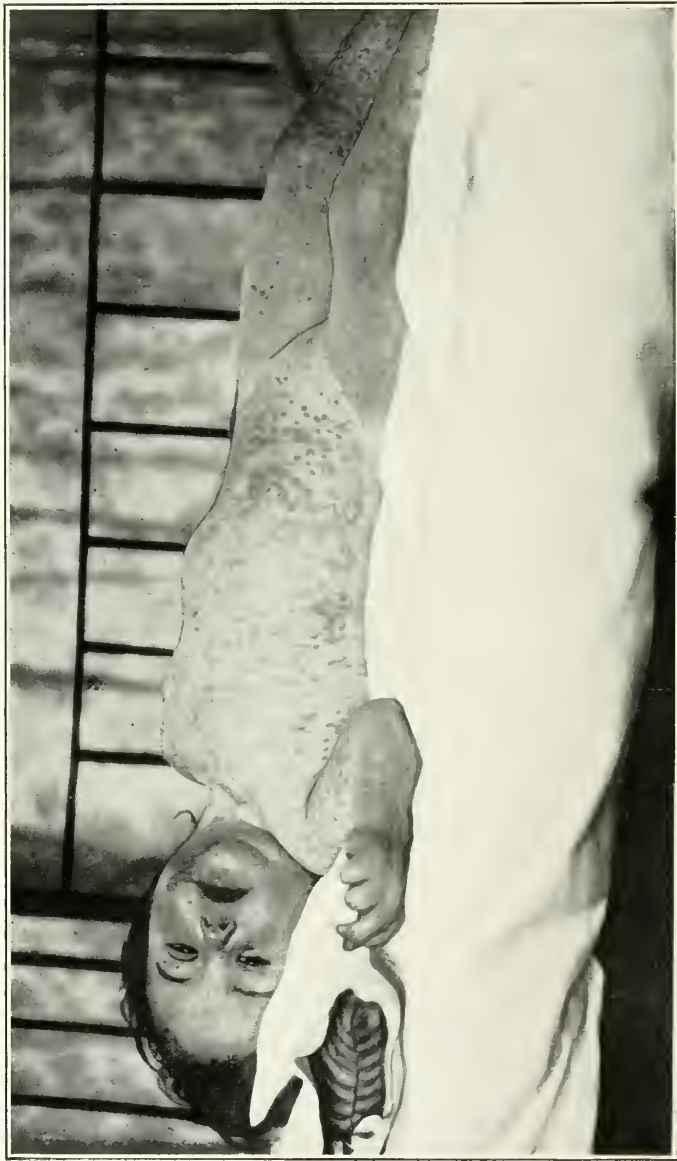


Photo. J. Neale.

MEASLES.



(Ralph C. Richards, ad nat. aet.)

Measles (morbilli).

MEDICAL ANNUAL, 1904.

(1,) Intestinal obstruction, either acute or chronic.

(2,) A free diverticulum—that is, one attached to the intestine alone—may descend into a hernial sac, and then, by its presence, complicate this condition.

(3,) The intestine above an attached, patent diverticulum, may become invaginated into the diverticulum, or its mucous membrane may become prolapsed, forming a tumour at the umbilicus.

(4,) When, as in the most complete form of this defect, the diverticulum forms a tube opening freely at the umbilicus, we have a fæcal umbilical fistula.

(5,) Cysts of diverticular origin are at times formed in the abdominal wall, in the vicinity of the umbilicus, or intraperitoneal, either connected or disconnected with the intestine. Those that develop in the abdominal wall are usually properitoneal or subcutaneous, within or near the umbilical scar.

(6,) In addition to these cystic tumours, solid adenoid growths are occasionally found about the umbilicus, which are no doubt related in their origin to remains of the vitelline duct. These have been termed, by Lannelongue, diverticular adenoid tumours.

(7,) A Meckel's diverticulum may become the seat of an acute or chronic inflammation. Acute inflammation may lead to perforation, with local or general septic peritonitis. When the inflammatory process is chronic, thickening of the diverticular walls with circumscribed peritonitis will result, as in chronic inflammation of the appendix and gall bladder.

(8,) A true intussusception of Meckel's diverticulum may occur, and end in gangrene and peritonitis if not operated on.

Professor A. E. Halstead has treated this subject very fully.¹ Mr. J. F. Dobson² has furnished a paper on intussusception of the diverticulum. Mr. F. T. Travers³ has also reported an interesting case of intussusception of a diverticulum, with secondary ileo-colic intussusception.

REFERENCES.—¹*Med. Rec.*, Nov. 29, 1902; ²*Lancet*, April 25, 1903; ³*Ibid.*, July 19, 1902.

MEDIASTINITIS, (Purulent). *Priestley Leech, M.D., F.R.C.S.*

Prof. Kopfstein,¹ of Vienna, in a paper on mediastinitis, reports four cases on which he operated. The causes are injury, extension from suppuration in neighbouring tissues or organs (pleura and pericardium, etc.), and metastatic suppuration, as in rheumatism, pneumonia, etc. If the surgeon do not let out the pus it may point at the side of the sternum in one of the

intercostal spaces, or may perforate the trachea, bronchi, lung, pleura, or pericardium. Very few of these cases recover. The tuberculous form is attended with least pain. The symptoms are pain over the sternal region radiating through to the dorsal surface, and locating itself more particularly between the shoulders (an abscess in the posterior mediastinum will give rise to the same symptom). Another symptom is intense pain experienced at every cardiac systole. In acute cases there is generally fever, rigors, and perspiration. The diagnosis is very difficult, depending very largely on the previous history, but the presence of pain and fluctuation may assist. The prognosis is bad. The sternum may be trephined, and Milton has divided the sternum in the middle and chiselled a portion out of each side.

REFERENCE.—¹*Med. Press*, Dec. 10, 1902.

MELÆNA NEONATORUM.

G. F. Still, M.D.

This is probably the most dangerous of the various forms of hæmorrhage to which newborn infants are liable. It occurs usually during the first twenty-four hours after birth, and may be accompanied with hæmatemesis. It is usually fatal in a few hours. Abt¹ discusses the causation of this condition. Landau's theory of ulceration of the stomach from emboli is discarded; congenital syphilis is thought to explain some of the cases, and was present in two at least out of twelve infants with spontaneous hæmorrhages in various parts of the body; in such cases changes in the small blood-vessels have been found. Micro-organisms have also been found in the blood and tissues, but there is no satisfactory evidence of any specific bacterial infection. Audry² found considerable hæmorrhage into the alimentary canal, 14 times in 100 consecutive necropsies on infants under four weeks old; the hæmorrhage was most constantly in the small intestine; once it was in the stomach only; it was never limited to the large intestine. One of these 14 cases was syphilitic, one had whooping cough, and another influenza; in most, however, the clinical symptoms had been those of simple gastro-enteritis; only three had shown hæmatemesis or melæna during life. But such cases were probably of somewhat different type from those which are usually called melæna neonatorum, and no doubt may be amenable to simple treatment.

The difficulty of treating the true melæna neonatorum is great, and is partly due to the rapidity of the hæmorrhage and resulting collapse. Abt considers that internal remedies are

of no avail, but Tuttle³ has recorded a case of hæmatemesis in an infant four days old treated successfully with a solution of **Adrenalin Chloride** (1 in 1000), 5 drops every four hours; and Dr. Emmett Holt⁴ records the case of an infant who vomited dark, coffee-coloured liquid soon after birth, and had also small hæmorrhages in the skin; a grain of **Saccharated Extract of Suprarenal Gland** suspended in water was given every hour, and after twelve hours the hæmorrhage ceased and the infant recovered.

Holt Schmidt⁵ reports five consecutive cases of melæna neonatorum treated successfully with hypodermic injections of **Gelatin**. A 2 per cent solution of gelatin was boiled for five or six hours, and kept in a flask stoppered with cotton wool; the solution was warmed to blood-heat just before use. Fifteen c.c. of this solution were injected hypodermically, usually in two places to avoid excessive tension, and in three of the cases one such injection was sufficient. A recovery of 100 per cent in melæna neonatorum certainly seems to justify a further trial of this method of treatment. Out of 14 cases at the same hospital not treated with gelatin, 7 proved fatal.

REFERENCES.—¹*Jour. Amer. Med. Assoc.* in *Arch. Ped.* July, 1903; ²*Lyon Med.* in *Brit. Med. Jour.* Nov. 23, 1901; ³*St. Louis Courier of Med.* in *Arch. Ped.* July, 1903; ⁴*Arch. Ped.* April, 1902; ⁵*Münch. Med. Woch.* in *Med. Rev.* Feb. 1902.

MELANOMA.

Priestley Leech, M.D., F.R.C.S.

In a lecture on this subject Eve¹ draws attention to the following points: It may occur in the skin; matrix of the nail; on certain muco-cutaneous surfaces (the labia, the penis, the eyelid, and the anus); on mucous membrane, *e.g.*, the palate, and the inner surface of the cheek; in the eye; and cases have been reported in certain rare situations, such as the ovary and the epididymis. The growths are most common in the skin and the eye. Most of the skin cases originate from moles. The mole usually enlarges, but not much; occasionally it may attain the dimensions of a walnut. In other instances it ulcerates superficially and bleeds, with or without noticeable enlargement. In a third group no apparent change takes place, and in a fourth the disease commences as a superficial deposit of pigment in the skin without any definite tumour formation. Evidence may be wanting that the neoplasm originates in the mole, or it may spring up in a scar. In some few instances it is said that the mole was scratched or irritated. The most

remarkable examples of this disease are those cases in which it commences as a thin layer of pigment in some part of the skin without any definite tumour.

When enlarged glands presenting the characters of malignancy are seen, the possibility of this disease must be borne in mind, and the mole may present absolutely nothing abnormal. The majority of the cases occur after fifty years of age. The nearest lymph glands become affected, and then metastatic growths appear in the viscera, the bones, and sometimes in every tissue of the body; pigment may be secreted in the urine. The tendency to formation of secondary growths in the liver does not appear to be so great in the melano-sarcoma of the skin as in primary melanosis of the eye, nor is the excretion of melanin in the urine so frequent. The average duration of life in these cases is about two or three years; but some cases last much longer, even to eleven and twenty years; a similar latency may be observed in melanotic tumours of the eyeball.

The present tendency is to regard the growth as a carcinoma, and not a sarcoma. Some of the tumours are in anatomical arrangement definitely epitheliomatous. The treatment is free **Excision** or **Amputation** of the affected part; and the removal of the nearest chain of lymphatic glands, whether palpably enlarged or not, should never be omitted. After excision of the eye, no further symptoms may be noticed for long periods, and then death may follow with the clinical manifestations of secondary growths in the liver, and the eye-trouble may excite so little attention that a patient may be admitted to hospital for enlarged liver and ascites, the intra-ocular tumour being unsuspected until the *post-mortem* examination.

REFERENCE.—¹*Pract.* Feb. 1903.

MENINGITIS.

Purves Stewart, M.A., M.D.

In addition to **Lumbar Puncture**, which is not only of the greatest diagnostic value (*see* "Lumbar Puncture") but has occasionally a marked remedial effect, good results have been recorded in several cases of tuberculous meningitis from the administration of **Creosote**. In Thomalla's case¹ the patient, a young adult, had 8 minims of creosote in capsule three times a day, together with 15 minims of Nanning's **Extract of China** to counteract the gastric irritation which prolonged administration of quinine is likely to produce. The treatment was continued for many months, and the patient, who in addition to symptoms of

meningitis had tubercles in the choroid, was completely restored to health. Davy² had a successful case in a child of eight, in whom **Creosote-Vasogen** 20 per cent was given, commencing with ℥ 5 to 7 in milk, and gradually increasing to ℥ 12. In ten days improvement commenced, and convalescence was established in a month, but the treatment was maintained for four months. Vasogen appears to be a valuable excipient for the administration of creosote, rendering the latter non-irritating to the stomach, without diminishing its therapeutic efficacy.

REFERENCES.—¹*Berlin. klin. Woch.*, June 16, 1902; ²*Brit. Med. Jour.*, Feb. 28, 1903.

MIGRAINE.

Purves Stewart, M.A., M.D

ETIOLOGY.—Various hypotheses have from time to time been suggested to account for the familiar phenomena of migraine. These theories may be classified into four groups, vasomotor, toxic, reflex, and cerebral. But none of them appears satisfactorily to explain the disease, its paroxysmal nature, the regular sequence of its symptoms, the visual aura, headache, vomiting, slow onset, rapid recovery, and subsequent period of relative immunity. Spitzer,¹ however, offers a most ingenious explanation of the phenomena. He agrees that the aura is cortical in origin, whilst the pain is probably connected with the dura mater. His own theory is that migraine depends on *stenosis of the foramen of Monro*, absolute or relative. If, now, from any one of the various possible exciting causes, differing with different patients, an active or passive cerebral hyperæmia occurs, in which the choroid plexus participates, the plexus swells up, plugs the foramen, and dams back the intra-ventricular fluid. One lateral ventricle becomes distended, and the corresponding hemisphere is compressed (hence cortical irritation and visual aura) and driven against the dura (hence dural pain). The attack brings its own relief as follows: When the intra-ventricular pressure can distend the ventricle no further, part of the choroid plexus becomes prolapsed through the foramen, the fluid rushes out and the attack is relieved. The subsequent temporary immunity is also explainable, for until the prolapsed and congested portion of choroid plexus has shrunk again and receded up from the third ventricle into its normal position, the flow downwards of cerebro-spinal fluid is abnormally easy, so that causes which formerly would have induced an attack can no longer do so. The more severe the attack, the longer will be the period of subsequent immunity, since it will take longer for the prolapsed choroid

plexus to shrink back. The tendency to spontaneous cure as life advances is explained by a gradual stretching of the foramen by successive attacks.

This extremely ingenious hypothesis would certainly account for practically all the phenomena. From its very nature, however, it is impossible of proof or disproof. The difficulty is to explain the initial hyperæmia of the choroid plexus. Granted this latter, the rest follows with almost diagrammatic simplicity.

With regard to the TREATMENT of migraine, we should endeavour in every case to determine, if possible, the particular exciting cause. Psychical causes such as worry or over-work, may induce an attack, so also may errors of refraction (particularly astigmatism) adenoids, carious teeth, and other peripheral irritants, whilst constipation, renal disease, etc., may have a toxic influence. It is therefore necessary, for successful treatment, to approach each case from the etiological standpoint. As Burnet² puts it, we must ask ourselves two questions: (1) What is the patient's diathesis? Is he gouty, rheumatic, or neurotic? and (2) How has the attack been brought on? Was it, for example, by constipation, or by some mental worry?

As to general treatment, applicable to almost every case, **Rest** is the first essential, and in a quiet, darkened room. The recumbent posture is not necessarily the best, and some patients feel better reclining in an arm-chair. As the feet are often cold, a **Hot-water Bottle** is a great comfort, and a warm shawl thrown lightly over the head. **Mustard** to the back of the neck is sometimes beneficial. Tea or coffee only aggravates the condition in many sufferers. If by the above measures, the patient can be made to sleep for a few hours, he is usually free from symptoms on waking.

Next, we should adopt an *etiological* treatment, presupposing that we have discovered the patient's diathesis, and the underlying exciting factor. If the patient is gouty, **Colchicum** should be given; if rheumatic, **Salicylate of Soda** or **Aspirin**. When over-work or mental worry is the exciting cause, **Sodium Bromide**, gr. 10-15 every three hours, is recommended. If eye-strain or some error of refraction be present, it is well to combine with the bromide small doses of **Tinct. Belladonnæ**. If the stomach is at fault, an **Alkaline** carminative mixture should be given. Constipation should be treated by 5-grain doses of **Calomel** followed by a Seidlitz powder. If the patient has a tender tooth, it should be appropriately treated by the dental surgeon. In every case

of migraine the urine should be examined, testing it not only for albumin, but noting its specific gravity, and if chronic renal disease is present, appropriate dietetic measures should be carried out.

If an attack comes on during the *menstrual period*, a **Hot Sitz Bath** or a foot bath is advisable, followed by some such mixture as the following :—

R	Spirit Chloroform		Tinct. Card. Co.	āā ʒij
	Spirit Ammon. Aromat.		Liq. Ammon. Acetat.	ad ʒiij
			Misce.	

Sig. ʒij ex aqua, secunda hora.

Finally, as to symptomatic treatment by analgesics, directed to the relief of the headache, **Phenacetin** is the most popular, but to be of any use it must be given in large doses, 15 to 20 grains. Burnet considers antipyrine and exalgin much less trustworthy, and caffeine also unsatisfactory. In his opinion, by far the best analgesic in migraine is **Citrophen**, given in 15-grain doses every four hours, till 45 grains have been taken. It should be used as an accessory to other appropriate remedies, thus in rheumatic patients it is well to combine it with **Salicylate of Soda** or with **Aspirin**. For the nausea and vomiting, if mustard to the epigastrium and ice to suck fail to give relief, Burnet recommends the following simple mixture to be taken every hour :—

R	Tinct. Zingiberis	ʒj		Syrup Zingiberis	ʒiv
	Tinct. Capsici	℥ 36		Aq. Menth. Pip.	ad ʒiij
				Misce.	

Sig. ʒij ex aqua.

When sickness persists in spite of such simple measures, emetics, such as **Vin. Ipecac.** and warm water, may be successful in bringing the vomiting to an end.

Between the attacks prophylactic treatment should be considered. Remove any local exciting cause, treat the diathesis, and in every case a daily free evacuation of the bowels must be insisted on by the administration of cascara or other suitable laxative. In all cases of migraine, but especially in gouty subjects, regular **Open-air Exercise** is of supreme importance.

To sum up, attend to the *primæ viæ*, get abundance of fresh air, and if, in spite of this, an attack comes on, go straight to bed with hot bottles and perhaps a dose of **Citrophen**.

REFERENCES.—¹*Neurol. Centralb.*, p. 705, 1901 ; ²*Med. Press*, April 8, 1903.

MORPHIA HABIT. (See "Opium Habit.")

MOTHER'S MARK. (See "Neoplasms, Vascular.")

MYOPIA. (See "Vision.")

NEOPLASMS, (Vascular).

Priestley Leech, M.D., F.R.C.S.

Wyeth,¹ of New York, has successfully treated several vascular neoplasms by the injection into their substance of **Very Hot Water**, from 190° to 212° F. and over. The tumours so treated have been: The arterial angioma (cirroid aneurysm), capillary angioma or "mother's mark," and the venous angioma (cavernous nævus). The results have been good, and no accidents have occurred. A syringe with a metal cylinder and adjustable piston, with needles of varying sizes, is employed; under ordinary aseptic precautions boiling water taken directly from a cauldron is used, and injected into the substance of the tumour. The quantity and temperature of the water employed vary according to the size and character of the growth. In the arterial and venous tumours of large size the needle is thrust deeply into the mass, and from 30 to 60 minims of water are forced out. The needle is then withdrawn from one-half to one inch, and the operation is repeated until the entire tumour is solidified. The water must be sufficiently hot to coagulate immediately the blood and albuminoids of the tissues, but not so hot and under such a pressure as to scald and produce a necrosis of the skin. When the tension is sufficiently great to cause a slight bleaching of the skin, the injection should be discontinued in that area. In capillary nævi situated upon important structures, *e.g.*, the eyelid, nostril, etc., a small instrument with a delicate needle should be used, and the water must be a little below boiling point, say 190° F. No more than 2 to 6 minims should be injected in a single puncture, and treatment should start from various points at the periphery, the operator watching closely the effects of the first injections, and after a week or ten days repeating them if necessary. Water at a very high temperature is apt to produce a slough in the capillary variety.

In cirroid aneurysm and the large cavernous nævi the water should be boiling, and kept at the boiling point while the instrument is being used. For this purpose Wyeth has devised a long metal instrument, beneath the barrel of which a Bunsen burner is held while the operation is done. Complete narcosis is necessary, and in no instance has any painful symptom or septic reaction ensued except in one case which passed from under

his care; this suppurated, but the result was good. Especial caution is necessary in treating angiomas of the scalp and neck, on account of the ensuing œdema. Not more than 5 or 6 ounces should be used in one case of cirroid aneurysm of large size situated over the parietal bone.

Dr. Frederick Griffith² reports a successful case in a child seven months old, where a drachm of hot water (180° to 200° F.) was injected at intervals of three or four days, and no anæsthetic was used.

Payr³ reports a case of cavernous angioma of the chin which was treated successfully by the insertion of **Strips of Metallic Magnesium** into the tumour through a tenotomy wound. The strips, which were 14 to 18 millimetres long and 2 wide, were passed into all parts of the tumour, care being taken to avoid penetrating the mucous membrane of the mouth. The action of magnesium is to absorb the oxygen from the water of the part, forming an oxide, and hydrogen is set free; the chemical decomposition causes a coagulation of the blood in the neighbourhood of the magnesium. In the case quoted free gas was felt in the tissues the day after operation, and the magnesium was absorbed on the eighth day.

REFERENCES.—¹*New York Med. Jour.* Dec. 6, 1902, and Jan. 3, 1903; ²*Ibid.*, May 2, 1903; ³*Deut. Zeits. f. Chir.* Bd. 63, Hft. 5 and 6.

NERVE ANASTOMOSIS. (See "Facial Nerves.")

NEURALGIA, (Facial.) (See also "Headache.")

J. G. Turner, F.R.C.S., L.D.S.

Attention is drawn by several authors to these affections, and the opinion of Gross, of Philadelphia, that the pain of tic-douloureux is due to cicatricial compression of the nerves in the alveolar border of the jaws after loss of the teeth, is upheld by Dr. Jarre, in France, who claims success in the treatment of this affection by cutting away the alveolar border.

Dr. Nogué reports the cure of a case by curetting and repeated cauterising of a residual dental abscess.

Mr. Sefton Sewell believes that certain cases have their origin in an edentulous condition of the jaws leading to some irritation of the articular branches of the fifth nerve, due to alteration of the normal arrangement of the structures forming the joint. He believes this cause to operate even in cases where the molars and bicusps of one jaw alone are wanting. Incidentally it was found that stretching of the jaws gave relief, and insertion of artificial teeth gave permanent relief.

M. H. Cryer, of Philadelphia, believes that facial neuralgia is often the result of the pressure of interstitial deposit of new bone on the nerves in the mandible, due to an osteitis set up by chronic irritation of a dead tooth or of an impacted tooth, generally a third molar. In support he shows sections of mandible showing remarkable increase in density of the bone, concomitant with a dead tooth or an impacted third molar.

NEURALGIA, (Surgical Treatment of). *Wm. Thorburn, F.R.C.S.*

Abbe¹ communicates a paper upon this subject. Dealing with the question of **Removing the Gasserian Ganglion** for tic-douloureux, he quotes from Türk an analysis of 201 operations, with 17 per cent of deaths and 77·6 of cures. Impressed with this mortality, and with the difficulties of the Hartley-Krause operation, he has adopted a method of **Section of the Branches** of the ganglion, with interposition of rubber tissue to prevent their re-union. As a reason for this procedure, he states that he regards the cause of the neuralgia as being generally distal to the ganglion, and that he finds sterile rubber tissue to be a well borne and lasting material when interposed to prevent adhesions between the brain and the dura mater. He has adopted this method in six cases of trigeminal neuralgia, of which the nerve section was intra-cranial in five, and all cases have remained well for periods extending up to six years.

Describing the operation, Abbe says: The external carotid artery may be ligated with advantage in controlling hæmorrhage. A vertical incision over the middle of the zygoma carried through the temporal muscle to the bone divides no important nerve or vessels. The muscle is scraped to either side and held by retractors. A small opening is then quickly made by mallet and gouge, and this is enlarged rapidly and safely to an inch and a half diameter. No better exposure can be had by any incision than this simple straight one. The dura is then pressed away from the middle fossa until the nerves are exposed. The much complained of hæmorrhage from venous sinuses on dissecting up the periosteum can be best controlled, and very quickly, by pressing a strip of rubber tissue upon the place with a firm pad of gauze in strips. The clotting of blood under the rubber tissue takes place very quickly, while if plain gauze is put in contact with the bleeding point, the blood being sucked up into it, prevents clotting. The nerve-trunks I grasp in separate artery clamps, divide each close to the foramen of exit, and, either by

cutting or by rotation of the forceps, separate them from the Gasserian ganglion. The wound is packed for a few moments with narrow strips of iodoform gauze until dry. A piece of thin gutta-percha tissue, stiff enough to be easily handled, is sterilized by rubbing with bichloride solution, and kept in salt solution a few moments before operating. This is cut one and one-half inches long and three-fourths of an inch wide. This is laid carefully over both the foramen rotundum and ovale, where the nerves have been separated and pressed carefully into place by iodoform gauze. In a very few moments the gauze may be drawn away and the Gasserian ganglion allowed to settle down upon the rubber tissue. A small drainage tube should be placed in the angle of the wound for a few hours to ensure a perfectly dry healing."

Bartlett² has made a careful study of "the surgical anatomy of the middle cranial fossa," with a view to avoiding the middle meningeal artery in operations upon the Gasserian ganglion. He had hoped to formulate some rule for avoiding this artery, but this is "impossible in dealing with a structure which is so irregular that in 100 middle fossæ it can hardly be said to follow identically the same course in any two." The artery may be met with at "almost any point in the temporal fossa." At times it even enters the skull through the foramen ovale and not through the foramen spinosum, in which case it would almost certainly be injured. There is, however, one fairly general rule, viz., that the nearer the second and third divisions of the trigeminal (or the foramina rotundum et ovale) are to one another, the more distant is the meningeal artery likely to be from the third division, and that this distance averages 3 millimetres.

Schwab³ describes microscopical changes found in the Gasserian ganglia of six cases of trigeminal neuralgia, but does not contend that it is proved that these changes are the cause of the disease, admitting that they may be its effects.

REFERENCES.—¹*Ann. Surg.* Jan. 1903; ²*Ibid*, Nov. 1902; ³*Jour. Ment. and Nerv. Dis.* Feb. 1903.

NOSE (Diseases of the). (See also "Accessory Sinuses," p. 100.)

H. Lambert Lack, M.D., F.R.C.S.

Suprarenal Extract.—Braden Kyle¹ discusses the use of extract of **Suprarenal Gland** in diseases of the nose and throat, and remarks on its extremely erratic action. Using the same solution in the same individual in the same manner, the results following one application may be beneficial, while a subsequent

application may produce the most intense coryza, with frontal headache and neuralgia. Some patients are particularly susceptible to the drug, and in them its application to any part of the respiratory tract is followed by the symptoms of an acute cold, lasting three to four days. Kyle considers its local effects are beneficial in cases of congestion of a part dependent upon purely local causes, but when the congestion is a local manifestation of a systemic condition, the results are not beneficial. The blanching of the tissues affords a clear field for operation, which is of the greatest advantage in nasal surgery. The drug possesses no antiseptic nor anæsthetic properties. It may be sterilised by heat without deteriorating. Acute coryza may be relieved, or may be made worse; in the majority of hay fever cases it gives unfavourable results. Although the application is of great advantage whilst operating on the nose, in lessening the amount of hæmorrhage at the time, marked bleeding follows some hours after operation, and if large arteries are divided, as in operating upon the septum, it is certain to be followed by severe hæmorrhage. He considers that the action of the drug is too uncertain to warrant its promiscuous use in inflammatory affections of the larynx.

Stanley Green² recommends the solution of **Adrenalin Chloride** in intranasal operations, where a bloodless field is of importance, but the nose must always be plugged after the operation, as hæmorrhage commences thirty to forty minutes afterwards, and is often troublesome. He also recommends its use in ordinary colds and in hay fever. (See "Hay Fever.")

Collapse of Alæ Nasi.—Menzel³ states that in transitory cases, as in those of temporary weakness due to an enfeebling disease, the various dilators are to be recommended. In the irreparable cases he advises operative treatment, and strongly recommends the subcutaneous **Injection of Paraffin**, so as to give firmness and solidity to the alæ. In one case the paraffin caused a bulging of the soft tissues into the vestibule, and had to be subsequently removed through an incision.

Paraffin Injection for Nasal Deformities.—This method for correcting the "saddle-backed" deformity of the nose, whether resulting from injury or from congenital syphilis, has now been tried in a large number of cases, and sufficient experience has been obtained to define its limits and advantages with more or less accuracy. The method was introduced in 1900 by Gersuny, of Vienna, who used vaseline with a relatively low melting

point, 104° F. It was found that this easily melting paraffin tended to become fluid when the patient was feverish, spread into the surrounding neighbourhood instead of solidifying quickly at the site of injection, might easily cause pulmonary embolism, and tended to be slowly reabsorbed. Eckstein introduced a paraffin melting at a temperature of 60° C., which diminished these risks, but had the disadvantages that its injection was followed by considerable reaction. The rapidity with which it solidified gave the operator very little time in which to model the nose, and necessitated the use of special appliances for maintaining the temperature during injection. Scanes Spicer⁴ used paraffin melting at 104° F. No paraffin passed into the eyelids at the time, and no pain or inflammation followed, yet in a few days the upper eyelids became œdematous, and a small nodule of paraffin could be felt in the left eyelid. An excellent result was obtained as far as the aspect of the nose was concerned, but a subsequent operation had to be performed upon the eyelid.

Walker Downie⁵ used paraffin melting between 104° and 108° F. To prevent this solidifying in the needle, he bound round the proximal half of the needle collodion with cotton thread, over which he wound a piece of fine platinum wire, each end of which was soldered to a separate copper wire, these copper wires leading to a storage battery furnished with a rheostat. The platinum wire surrounding the needle could thus be heated to any desired degree.

Quinlan⁶ states that coagulation of the paraffin may be prevented by using a short thick needle with a wide bore instead of a long needle with a small bore.

Broeckaert⁷ agrees with this, and considers that the instrument should be made of silver, with an iridio-platinum tip. He considers it indispensable that the skin over the sunken bridge of the nose should be freely movable; otherwise a subcutaneous pit should first be made for the liquid.

Stephen Paget⁸ states that Eckstein's paraffin is extremely difficult to handle, has repeatedly caused a good deal of inflammation, and may even cause discoloration of the skin. In his later cases he has used a mixture which melted at 111° F. As the paraffin shrinks on cooling it is often necessary to do a little touching up after a week or ten days. He prepares the patient as for an ordinary operation, and adopts full antiseptic precautions. He gives a general anæsthetic, and makes an incision

in the skin before introducing the needle. After moulding the nose a cold compress is placed over the face. He has operated on 26 cases, and has had good results, but he remarks that the method is not so easy as it sounds, requires considerable experience, and involves grave responsibility.

Lynch⁹ uses soft paraffin with a melting point between 99° and 104° F. He injects a few drops of cocaine solution to secure painlessness. The melted paraffin is allowed to cool in the syringe until it emerges from the needle in a worm-like mass. The needle is then inserted into the nose, the paraffin injected and at the same time moulded to the desired shape. The author reports several successful cases.

Harmon Smith¹⁰ states that deformities are reduced, but not overcome by the use of soft paraffin. He notes a tendency of the paraffin to run into the eyes, and also to form lumps on the forehead.

Holbrook Curtis reports a case in which an injection of paraffin made to correct a very slight depression at the junction of the lip and nose had given rise to two tumefactions on the side of the nose and border of the orbits. No suggestions were forthcoming as to any method by which this paraffin could be removed. (See "Collapse of Alæ Nasi" above.)

These reports show that a paraffin should be chosen with a melting point of not higher than 115° F., and not lower than 108° F. A general anæsthetic is employed by some, by others it is considered unnecessary. The great point to be emphasised is that efficient means must be taken to prevent the spread of the paraffin into the surrounding tissues. Further, too little rather than too much must be injected; the former is easily remedied by a subsequent injection, the latter may produce a more unsightly deformity than the original condition for which the operation was undertaken.

REFERENCES.—¹*Therap. Gaz.* July, 1902; ²*Brit. Med. Jour.* May 10, 1902; ³*Münch. Med. Woch.* May 5, 1903; ⁴*Clin. Jour.* April 9, 1902; ⁵*Brit. Med. Jour.* Nov. 8, 1902; ⁶*Laryngoscope*, Aug. 1902; ⁷*Pract.* Jan. 1903; ⁸*Brit. Med. Jour.* Jan. 3, 1903; ⁹*Laryngoscope*, Feb. 1903; ¹⁰*New York Med. Jour.* May 17, 1902.

ŒSOPHAGUS.

H. Lambert Lack, M.D., F.R.C.S.

McKenzie¹ reports a case of a penny in the œsophagus, the lower edge being just behind the upper edge of the manubrium. The diagnosis was made by means of the X-rays. All attempts to remove the penny with coin-catchers and probangs failing,

it was decided to attempt its removal under an anæsthetic by means of laryngeal forceps, and with the help of the X-rays. This method was entirely successful.

REFERENCE.—¹*Brit. Med. Jour.* April 20, 1902.

ŒSOPHAGUS (Cancer of). *Priestley Leech, M.D., F.R.C.S.*

Tuffier¹ expresses the opinion that the therapeutical results to be expected from œsophagectomy for cancer are at least problematical. He holds that there are but two practical methods of thoracic œsophagotomy; one the mediastinal route, and the other the transpleural.

The mediastinal method may be useful for removal of an impacted foreign body, but for resection of a stricture or a cancer it is a dangerous and inadequate procedure; the surgeon cannot see what he is doing, and it is only applicable to the upper third of the thoracic œsophagus.

The transpleural route is described in an operation devised by him and Dujarier. It has been performed in animals, and is held to be applicable to human beings. It consists in the formation of a large cutaneo-costo-pleural flap enclosing portions of the seventh and two or three inferior ribs, the base or attached portion of which is situated posteriorly and near the spine. On elevation of this flap there is a free exposure of the left pleural cavity and the pericardium and, after incision of the pleura over the posterior mediastinum, of the œsophagus as far as the diaphragm.

Demoulin² records two cases of cancer of the thoracic portion of the œsophagus, in which the new growth was removed by way of the posterior mediastinum on the right side of the spine, and an associated incision along the sterno-mastoid muscle in the neck. There was but slight hæmorrhage and very little resultant shock, but both patients died in the same way, with no rise of temperature, but extreme dyspnœa and acceleration of the pulse. Demoulin thinks that this method may be useful in cases of impacted foreign bodies, but has doubts about the future of resection of the thoracic portion of the œsophagus for cancer. (See "Lung Surgery" and article cited below³.)

REFERENCES.—¹*Bull. et Mém. de la Soc. de Chir. de Paris*, No. 17, 1903, *Brit. Med. Jour.* July 4, 1903; ²*Ibid.*, No. 4, 1903, *Brit. Med. Jour.* Feb. 28, 1903; ³*Ann. Surg.* Feb. 1903.

ŒSOPHAGUS (Pressure Pouch of). *Priestley Leech, M.D., F.R.C.S.*

Butlin¹ gives an account of eight cases of "pressure pouch" of the œsophagus removed by operation. This condition was

looked upon as very rare, but Butlin has operated on these eight cases in ten years. In every one the symptoms were such as he had described in 1898, and are as follows :—

(a,) Return of fragments of undigested food, not immediately after the food has been taken, but many hours or even a day or two afterwards.

(b,) Gurgling up of gas from the throat, particularly when pressure is made upon the left side of the neck low down. It is a very distressing symptom, and there may be bulging in this situation when food is taken, but this is not constant.

(c,) A bougie is arrested about 9 inches from the teeth. If a curved metal instrument is used, the end can often be felt in the posterior triangle of the neck, almost always on the left side.

Other symptoms which may be present in individual cases are : Wasting when the pouch has attained a large size ; pressure symptoms, *e.g.*, cough ; possibility of introducing a full-sized bougie into the stomach in the early stages of the disease. Acidity of the returned food does not in the least contra-indicate the presence of a pouch.

The operation he practises for their removal is on the lines laid down by Prof. von Bergmann.² The following suggestions are made to surgeons attempting this operation :

(a,) To make sure there is no stricture of the œsophagus below the opening of the pouch, pass a bougie into the stomach from the mouth at the time of the operation. If this cannot be done before the wound is made in the neck, expose and separate the pouch and draw it upwards, when the bougie can often then be passed.

(b,) If the pouch be of long standing, and if it be of large size, a soft tube must be passed from the mouth into the stomach and retained for so long as is necessary for feeding. If the patient cannot or will not permit this, or if he vomit up the tube, it must be passed over a guide every time the patient is fed, otherwise almost the whole of the food will pass out of the wound into the neck. If this guide cannot be retained, a tube should be passed into the stomach through the wound and retained there until healing is nearly accomplished.

(c,) The less the tissues below the pouch are disturbed the better.

(d,) No attempt should be made to close the external wound, and it should be drained by a soft drainage tube. The wound in the œsophagus should always be sewn up. Anyone interested

in the subject of pressure pouches will find it admirably and fully treated in a monograph by Dr. Hugo Starck³.

C. B. Lockwood⁴ relates a case of idiopathic (so-called) dilatation of the œsophagus, which he thinks is due to some disturbance of the nervous mechanism. He gave very much relief by passing an ordinary œsophageal tube with a distensible rubber bag around the last four or five inches of its stomach end. This bag could be distended by means of an ordinary hand pump. By this means the cardiac end of the stomach was dilated, and the patient's condition much improved.

Œsophageal Stricture.—Dr. Theodore Dunham,⁵ of New York, has devised some new instruments for the treatment of cicatricial œsophageal stricture. There has been great ingenuity displayed in their conception, and they seem worthy of a trial.

Dr. Zeldovitch⁶ says electrolysis of cicatricial œsophageal stricture has been much neglected, but it is quicker and more effective than mechanical dilatation, and its effects are more lasting.

Teleky⁷ has used the hypodermic injection of **Thiosinamin** for the treatment of cicatricial stricture. It is supposed to have a softening effect on fibrous tissue.

REFERENCES.—¹*Brit. Med. Jour.* July 11, 1903; ²*Ibid.*, vol. i, p. 944, 1898; ³*Die Divertikel der Speiseröhre*, Leipzig, 1903; ⁴*Ibid.*, July 18, 1903; ⁵*Ann. Surg.* March, 1903; ⁶*Roussky Vrach.*, Jan. 4, 1903; ⁷*Wien. klin. Woch.* Feb. 20, 1902; *Brit. Med. Jour.* June 17, 1902.

OMENTUM, (Surgery of).

A. W. Mayo Robson, F.R.C.S.

The value of the omentum in the operative treatment of intestinal and of stomach perforations and defects, for forming a cover for safeguarding lines of sutures, and for other plastic operations in the abdominal cavity, has been well known and employed by surgeons for years. Dr. Emanuel Senn¹ concludes:—

(1.) Transplantation of omentum over defects in the stomach is an established operation.

(2.) Transplantation of omentum over intestinal defects is recommended, but is still in the developmental stage.

(3.) Transplantation of omentum over defects in the cæcum is the most favourable portion of the intestinal tract.

(4.) Transplantation of omentum over defects in the small intestine should only be done after fixation of the segment of the intestine to the abdominal wall.

(5.) Gauze drainage should be resorted to, excluding the general peritoneal cavity.

Other papers on the subject have been contributed by Soraci² and by Hermes.³

Inflammatory Tumours of the Omentum.—Braun⁴ contributes from his own experience 5 cases. He believes that this disease is by no means rare, and that it is not dependent on the material employed for ligaturing. Its development depends rather upon pre-existing inflammatory changes of the omentum, or upon infection of the omental stump from ligatures during operation. Of thirty collected cases, fourteen recovered without operation. Six formed abscesses which were evacuated. In five cases silk ligatures were found. In three cases the tumour was extirpated. Only one case terminated fatally.

I have seen several of these cases, and in one large inflammatory omental tumour which I explored on account of pain and fever, expecting to find pus, I only discovered connective tissue and fat. In the course of a month the swelling had entirely disappeared and the patient got quite well.

Omental torsion forms the subject of a paper by Dr. J. F. Baldwin.⁵ He gives an account of two cases, referring to 6 others collected by J. Wiener, junr., of New York, which he says are all that he has been able to find reported.

I believe a case of my own,⁶ operated on March 1st, 1892, was the first intra-abdominal omental torsion operated on, for the one by Oberst in 1882 was a hernial sac, whereas mine formed a large abdominal tumour with a twisted pedicle no larger than a No. 6 catheter. The patient made an uneventful recovery after the removal of the tumour.

REFERENCES.—¹*Ann. Surg.*, April, 1903; ²*Rif. Med.*, Sept. 21, 1902; ³*Therap. Gaz.*, Aug., 1902; ⁴*Centr. f. Gyn.*, Sept. 7, 1901; ⁵*Ann. Surg.*, Dec., 1902; ⁶*London Clin. Soc. Trans.*, 1895.

ONYCHIA.

Norman Walker, M.D.

Fournier¹ finds the following drastic method useful in chronic affections of the nails, such as eczema, psoriasis, and hypertrophy: The fine point of a **Galvano-cautery** is inserted about 2 or 3 mm. from the free border of the ungual fold. The puncture should descend to the matrix, and should be made symmetrically round the nail at a distance apart of 2 or 3 mm. Ethyl chloride anæsthesia is used.

REFERENCE.—¹*Jour. des Mals. Cut. et Syph.* Jan. 1, 1902.

OPIUM HABIT.

Robt. Hutchison, M.D.

Jelliffe¹ relates his experiences of the opium habit and its treatment. He insists that the cases show an extraordinary

gamut of individual variation, and that the laying down of general rules for treatment is too often fruitless. The habit is a complex psychological network, and its treatment must take into consideration the many factors which enter into it. Most writers are prone to be influenced by their so-called moral bias, and seem unable to approach the question with an unprejudiced mind. He speaks of three main types of the habit: (1) Those who take opium by the mouth; (2) Those who absorb the drug through the respiratory mucous membrane, by means of the pipe; (3) Those who take morphine or allied products by the mouth, or subcutaneously by the hypodermic syringe. He quotes some astounding figures given by Grinnell² as the result of systematic enquiries among druggists, etc., in the State of Vermont, as to the quantities of narcotics sold. The number of "patent cures" is also a side-light on the prevalence of the habit.

In discussing treatment, he considers the attitude of the profession generally to be unduly pessimistic. To assume that the attempt to cure the habit is an *ignis fatuus*, and that the habit once acquired is something that can never be shaken off, is an idea that should not be entertained for an instant. Such an idea has a prophylactic and preventive influence on the laity, and the hell of the confirmed *habitué* cannot be too strongly coloured, if by so doing one may prevent any from entering therein. But for those who see such patients for considerable periods of time and in large numbers, it is not a helpful or a correct attitude. It should constantly be remembered that there are great variations in the intensity of the opium habit. There are great numbers of pleasure habitués: people who take it when they like and do not when they do not; particularly is this true of smokers. Again, there are those in whom the desire comes as does the desire of the dipsomaniac. These go on a debauch, remain under the influence of the drug for a week or two, are sick, and then do not touch it again for a month, a year, or even longer. Other cases are not rare in which the patient has voluntarily given up the drug and has never taken to it again. This is true of those addicted to all types of the habit. He quotes illustrative cases. Others again, especially the steady smoker, do not desire to get over the habit. Such are often able to attend to business, to do routine work, and yet to spend an hour or more in the pleasure of the poppy every day or every other day for a number of years. Obviously, therefore,

in considering the question of treatment the details must differ according to the demands of such varying groups.

The cardinal principles on which a rational therapy are to be founded consist in the substitution of different ideas by suggestion, and the substitution of different sensations by other drugs. These two factors, judiciously combined, will be of service in the most intractable cases. It is necessary in the first place, however, to obtain some relief from the actual sufferings of the morphino-maniac, before one can use mental influences, and therefore the principle of substituted sensations must first be brought into play.

Many drugs have been employed to bring about this purpose, but practically none have been of service outside of sanatoria, or patients confined under surveillance. For these cases the **Bromide** treatment is one of the very best in his experience: 120 grains of sodium bromide are given in half a tumbler of water during the day time, until 1 ounce has been administered in the same day. This may be sufficient to produce the "bromide sleep," or the drug may have to be continued on the third day. It is a safe rule to stop the administration after twenty-four hours if the drowsiness is so profound that the patient cannot be aroused or is incoherent. After the second or third day of the sleep the bromide is withdrawn. Rectal feeding should be practised. A weak heart or impaired pulmonary conditions are strong contra-indications; any degree of nephritis is to be regarded as a barrier to the bromide sleep. Although the bromide plan of treatment is far from being simple, or unattended by danger, yet compared with the dangers attending the ordinary treatment for the morphine habit it seems to be of marked value in well-selected cases, and in such the writer would not hesitate, under appropriate safeguards, to employ it.

Treatment by **Hyoscine** he finds contradictory. The use of the newer morphine modifications—heroin, dionin, and peronin—seems only the substitution of one undesirable habit for another. He records cases where gradual diminution of the daily dose was successful.

Camphor in Morphine habit.—Hofmann³ states that in many respects the physiological actions of morphine and **Camphor** are diametrically opposed, and this has led him to try the latter in chronic morphine poisoning, with the astonishing result that the usual severe symptoms on withdrawing the drug were almost entirely missed. Not only was there a decided antagonistic

action, but sedatives, such as **Trional** and **Dormiol**, were found to act much better with camphor than when given alone. The treatment is supplemented by the use of **Validol** and **Electric Baths**, and there is no danger of causing either camphor or validol habit.

Finkelstein⁴ considers too little attention has been paid to **Potassium Permanganate** as a specific antidote in acute morphine and opium poisoning. He remarks that the latest text-books on pharmacology dwell chiefly on the symptomatic treatment, and the administration of atropine. Tappeiner, Kohler, and others recently have expressed serious doubts as to the antagonism of atropine and morphine, which is purely theoretical.

W. Moor, of New York, has reported 71 cases of morphine poisoning treated by potassium permanganate with marked success. The doses used are from 30 to 60 minims of a 4 to 5 per cent solution in water, subcutaneously, until improvement is noted. Internally, it should be given in doses of 4 grains of potassium permanganate to each 3 grains of morphine taken, and for each ounce of infusion of opium, 6 grains of potassium permanganate should be given. If the amount of poison is unknown, from 8 to 10 grains of potassium permanganate are given in a glass of water, and then the stomach should be washed with a weak solution of the same salt.

REFERENCES.—¹*Amer. Jour. of Med.* May, 1903; ²*Medico-Legal Jour.* Sept. 1901; ³*New York Jour. of Med.* March 7, 1903; ⁴*Therap. Monats.* 1902, Hft. vii. s. 331; ⁴*New York Med. Jour.* March 7, 1903.

Purves Stewart, M.A., M.D.

Hirschclaff¹ has made researches with the object of producing a serum to act as an **Antitoxin** in cases of morphine poisoning. (See "Morphia, Anti-toxin for," p. 29). It should be stated, however, that additional treatment was employed in the form of **Atropine** and **Camphorated Oil**, so that the efficiency of the serum *per se* was not accurately tested.

A number of encouraging results have been published in which Lott's² method of treatment by **Hyoscine Hydrobromate** has been carried out. The essential features of this cure were described in last year's *Medical Annual*, p. 468 (*q.v.*), and though heroic in method and demanding the closest attention and unremitting care on the part of the physician, it has certainly produced singularly good results. Not only in Lott's hands, but in those of others have cures been attained. Thus Goldan³ reports a cure. Halleck⁴ reports five cases (generally combining

strychnine $\frac{1}{60}$ gr. with the hyoscine). Russell⁵ and Rosenberger⁶ also report successful cases in which the patient, who had previously been taking 60 grains of morphine daily, had remained, so far, without a relapse for over eleven months. Bering⁷ records a case of alcoholism successfully treated by this plan. Crothers,⁸ on the other hand, regards the hyoscine treatment as "unsafe and dangerous," and Mattison⁹ protests strongly against it as "inhuman and dangerous." It should be borne in mind that routine administration of hyoscine is by no means devoid of risk, and that individual idiosyncracies occur; but in a desperate disease like morphinomania, the physician may feel himself justified, with these results before him, in employing this method of treatment.

REFERENCES.—¹*Berlin. klin. Woch.*, Dec. 8 and 15, 1902; ²*Texas Med. Jour.*, Nov., 1902; *Brit. Med. Jour.*, March 7, 1903; ³*New York Acad. Med.*, Nov. 18, 1902; *Med. Rec.*, Dec. 13, 1902; ⁴*Ibid*, April 11, 1903; ⁵*Med. Rec.* Nov. 29, 1902; ⁶*Med. News*, Nov. 29, 1903; ⁷*Therap. Gaz.*, Aug. 1902; ⁸*Med. News*, Oct. 18, 1902; ⁹*New York Med. Jour.*, Feb. 21, 1903.

OTITIS MEDIA. (See "Ear, Diseases of.")

OXALURIA. *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

It is now generally admitted that oxalic acid is a normal constituent of the urine, and that we ought not to speak of the condition as a disease unless oxalate of lime crystals are present in large numbers and more or less persistently. Its relationship with a complex of nervous symptoms, as first described by Begbie, is also admitted, but these symptoms are no longer regarded as the result of oxalic acid poisoning, but the excessive excretion of oxalic acid is believed to depend upon altered nerve function. Some there are who persistently maintain their belief in a food origin for oxalic acid even when in excess. As all vegetable articles of food which contain cellulose also contain oxalic acid, there is abundant opportunity for the introduction of this substance into the body, but it is not in accordance with clinical experience to find that oxaluria or the formation of oxalate of lime calculi depends upon an excessive amount of vegetable food. On the contrary, it has more often been thought to be due to the abuse of animal proteids, and the alternation of oxalate of lime crystals with uric acid may frequently be observed in the urinary sediments of the same person.

Abeles showed long ago that after swallowing large quantities

of tea and spinach, not more than 20 mgs. of oxalic acid was found in the urine, a quantity which is not in excess of the normal average, so that although a few cases are on record where hæmaturia with oxaluria has followed tea, garden rhubarb, and asparagus, as a general rule it may be said that there is no such thing as alimentary oxaluria. Klemperer suggested a few years ago that as it was impossible to exclude oxalic acid from the diet, it was more rational to attempt to find some means of keeping it in solution, and he recommended the avoidance of articles of food containing much lime, such as milk, and the use of small doses of a salt of magnesia, for example, **Sulphate of Magnesia**, in the presence of which the oxalic acid remains in solution. Rosin¹ has adopted Klemperer's views, but would exclude from the diet, not only milk, but eggs, green vegetables, especially spinach and cabbage, tea and coffee, and he quotes the case of a patient whose urine was kept free from oxalate deposit so long as he followed this diet and took small doses of magnesia.

J. B. Ogden² states that Dr. Helen Baldwin has produced pronounced oxaluria in dogs by feeding them on a diet of meat and large quantities of cane sugar and glucose. He thinks oxaluria so produced must have been brought about by the production of gastritis. A more or less definite relation exists between oxaluria and the presence of indican in the urine, and the latter may be considered an indication of the amount of fermentation taking place in the bowel. It is certainly more in accordance with clinical experience to regard oxaluria as dependent, at least in part, on some gastro-intestinal derangement, than directly upon diet, but in any case Klemperer's prescription of 30 grains of sulphate of magnesia taken daily, might be expected to influence favourably any tendency to abnormal fermentations in the bowel.

REFERENCES.—¹*Die Therap. der Gegenw.* July, 1902; ²*Med. News*, April 4, 1903.

OZÆNA. (See "Rhinitis, Atrophic.")

PANCREAS, (Surgery of). *A. W. Mayo Robson, F.R.C.S.*

The pancreas had practically received no attention from a surgical point of view up to Senn's classical experimental work in 1886, and even for some time after that the only interest centered around cysts, so that Greig Smith, writing in 1896, said, "The experience of the last ten years has added little to

the work of Senn of Chicago." But what do we see to-day? That the subject is of such magnitude as to need a volume of considerable size to adequately deal with its pathology and surgical treatment. I myself have operated on nearly a hundred cases of diseases of the pancreas of various kinds.

Acute pancreatitis is one of the most serious and fatal of diseases, often coming on with startling suddenness, and it is astonishing how it can have escaped the notice of pathologists until so recently. Fortunately, surgery has been able to interfere beneficially in some of these cases, especially those ending in suppuration, and as our knowledge of the subject increases, we shall be able to do more both in the way of prevention and cure.

Chronic pancreatitis, though recognized from a pathological point of view, was practically unrecognized as a subject for surgical treatment until I drew attention in June, 1900, to the facts derived from an experience extending over some years, that many cases described as cancer of the head of the pancreas and leading to chronic jaundice, which ended fatally, were really cases of chronic pancreatitis that could be cured by draining the pancreatic duct indirectly through the bile passages. This has led to great success in the treatment of a class of cases previously regarded as hopeless.

As yet, the treatment of cancer of the pancreas is very unsatisfactory, and whether we shall ever be able to do much for malignant disease in this situation the future alone will prove: for, although a portion of the pancreas has been removed with success in one or two cases, it is an operation not likely to be frequently repeated, and the cure must be sought in an extended knowledge of cancer generally.

The treatment of cysts is most successful, and it is now well established that in drainage we may reasonably expect to cure or materially relieve in a very large proportion (probably 93 to 95 per cent) of cases.

Calculus of the pancreas is a disease about which very little has been heard and still less done, but of which more will be recorded in the future. A case of removal of calculus was described by my friend, Mr. Pearce Gould, in 1895, which survived the operation for twelve days; one last year in which my friend Mr. Moynihan successfully removed a calculus through the duodenum; and in February of this year I operated and removed three calculi from the pancreas, one from the gland

by the side of the common duct, one from the main duct which it was obstructing, that being reached through the duodenum ; and one about the size of a cob-nut from the main pancreatic duct on the left of the spine, this being the first case in which the main pancreatic duct has been deliberately opened through the substance of the pancreas, and stitched up again after removing the obstruction. The patient recovered and is now well.

The more complete exposure of the pancreas which can now be obtained by the method I have suggested for exposure of the common bile duct, will give an impetus to pancreatic surgery, and will render the operative technique both easier, safer, and more certain.

The diagnosis of pancreatitis and of malignant disease of the pancreas can be facilitated by an examination of the urine and fæces ; in the latter an excess of fat together with undigested muscle fibres being found, and in the former some peculiar crystals which Dr. Cammidge and myself have almost universally found in these cases. The crystals in the inflammatory and malignant cases differ in form, and in the length of time they take to dissolve in sulphuric acid.

PARALYSIS, (Hysterical).

Purves Stewart, M.A., M.D.

In opening a discussion at the British Medical Association, on the differential diagnosis of functional and organic paralysis,¹ Buzzard at the outset expressed his firm belief as to the reality of hysteria as a disease, and the necessity of distinguishing it from voluntary malingering. The term "functional paralysis" is difficult of definition, and he would limit it to "those cases which are independent of structural alterations of recognised character within or of the nervous system, and which may be removed rapidly or suddenly in a manner inconsistent with the presence of such alterations, usually as the result of persuasion or under the influence of some moral or physical shock." The presence of hysterical "stigmata" is not of great importance, inasmuch as, on the one hand, they may be absent in cases of functional paralysis, and on the other hand, they may occur as an inter-current complication in patients suffering from organic nervous disease. There are, however, many symptoms, the presence of even one of which is conclusive of organic disease ; such, for example, are optic neuritis or atrophy, fixed pupil, persistent hemianopia, absence of knee-jerks, electrical reactions of

degeneration in the muscles, localised muscular atrophy limited to a single muscle or a single nerve area, bed-sores, paralysis of the bladder, and Babinski's extensor plantar reflex.

On the other hand, he maintains that there is probably no single symptom which can be relied on, unsupported, to establish a diagnosis of functional paralysis. Special attention, however, should be paid to the mode of onset of the paralysis, which in many functional cases is preceded by physical or mental shock. The age of the patient and the absence of signs of cardio-vascular disease are also of value. (It should always be remembered that in patients with advanced arterial degeneration, an attack of organic hemiplegia may be induced by severe moral shock, in consequence of the rupture of an intra-cranial vessel).

Hysterical hemiplegia is rarely preceded by an attack resembling any kind of apoplectic seizure. In cases where an initial hysterical seizure does occur, there is no stertor, the face is not flushed, the temperature is unchanged, the pupils respond to light, the deep reflexes are undisturbed, and the patient can generally be roused to respond to questions. When established, hemiplegia is prone to vary from time to time in its degree of paralysis. Hemi-anæsthesia is very common, and is frequently associated with loss or diminution of the special senses, smell, taste and hearing, on the affected side. And instead of the hemianopia, which is often met with in organic hemiplegia, the hysteric often shows the well-known "crossed amblyopia," in which there is a concentric contraction of the visual field, both for light and for colour, especially on the hemianæsthetic side. The gait in hysterical hemiplegia, as originally described by Todd, is unlike that of organic disease, the patient drags the palsied limb along like a piece of dead matter, and uses no effort to lift it, so that the inner border of the foot may scrape the ground in walking. Todd also remarked that hysterical hemiplegia rarely attacks the face. When the face is affected in hysteria, it tends to exhibit spasm, and not paralysis of the affected side—Charcot's "glosso-labial spasm." Babinski's "combined flexion of the leg and trunk" is a valuable evidence of organic disease. The patient, lying on her back on a flat surface, crosses the arms upon the chest and tries to sit up. In organic hemiplegia the thigh becomes slightly flexed upon the pelvis, and the heel is lifted, whilst the limb on the sound side remains motionless. In functional hemiplegia the limb of the affected side is not lifted.

Buzzard regards persistent flaccidity of a paralysed limb, for

months or years, without tendency to spasticity or contraction, as practically conclusive against an organic lesion. In true organic contracture of the upper limb, it is impossible to straighten out the whole limb at one moment ; if the fingers be straightened out, the wrist remains rigidly flexed, and *vice versa*. But in hysterical contracture it is possible passively to extend the wrist and fingers at the same moment. With regard to the reflexes the presence of ankle-clonus should always predispose us to regard a case as organic, though in certain cases of functional paralysis, a pseudo-clonus may be elicited. In such cases the condition of the plantar reflex will be found of the utmost value. Babinski's extensor plantar reflex, Buzzard maintains, is pathognomonic of an organic affection of the pyramidal tracts. Not only in the direction of movement does it differ from the normal flexor response, but generally the extension is performed more slowly and deliberately than the flexion. The existence of muscular wasting in a limb does not negative hysteria ; a disused limb is, of course, liable to emaciate.

Hysterical monoplegia is frequently associated with a "sleeve" type of anæsthesia, not met with in organic disease. Hysterical paraplegia, probably the most common variety, is generally the least difficult of diagnosis. Examination of the knee-jerks, of the electrical reactions of the muscles, of the plantar reflex, and of the area of anæsthesia, together with the absence of bed-sores or of grave bladder trouble, should suffice in most cases to settle the diagnosis.

It is, however, in cases of insular sclerosis that the simulation of functional paralysis is most frequent. Many cases of this disease are diagnosed at first as hysterical, and the distinction from hysteria is often a matter of considerable difficulty. Buzzard is unable to accept the hypothesis which suggests that the early symptoms in such cases represent a hysterical attack which "eventuated" in structural disease. Rather does he regard the apparently functional symptoms as in reality occasioned by early morbid changes in the nervous system, possibly of the nature of perivascular inflammation, as Marie, Goldscheider and others suppose. In cases of early insular sclerosis the Babinski toe phenomenon is of especial value.

In the subsequent discussion. Judson Bury pointed out that even speedy recovery from severe paralysis was not a differential test between functional and organic paralysis. He instanced cases resembling Landry's paralysis where complete recovery

occurred, and regarded some of these as probable examples of acute anterior poliomyelitis, in which the lesions, though widespread, were slight and recoverable. Bury does not regard Babinski's toe reflex as absolutely pathognomonic of organic disease. The terms "functional" and "organic" in his opinion, are unscientific, and should be discarded. Paralysis of a limb, when not voluntarily simulated, always means definite changes, vascular or parenchymal, in some part of the motor path both in "functional" and "organic" paralysis. In both cases they may be persistent, witness the chronicity of some cases of neurasthenia and of hysterical paralysis. In both cases they may be evanescent, witness the quick recovery of certain cases already alluded to.

Mott referred to the experiments of Halliburton and himself on the chemistry of nerve-degeneration. *Cholin* is present in normal blood only in very minute traces, but in cases of degenerative organic diseases of the nervous system abundance of cholin may be detected. In early cases of insular sclerosis, this test may prove of value.

Purves Stewart called attention especially to the *postures* of organic paralysis, as contrasted with those of functional disease. First, as to *organic paralysis*. We are familiar with the postures which are gradually assumed by the paralysed limbs in organic paralyzes, whether hemiplegic, paraplegic, or monoplegic in distribution. These postures of organic paralysis are determined by anatomical rules. Thus when one group of muscles is paralysed from a nuclear or infranuclear lesion (as in disease or injury of anterior cornua, anterior nerve roots, or peripheral nerve trunks), the unopposed antagonists slowly fix the limb in a definite posture, which is not easily recognised, but can be predicted beforehand. If from a supranuclear lesion the muscles of a limb or segment of a limb are all more or less paralysed, the "pattern" of contracture depends upon the relative strength of the different spastic and paralysed muscles. Those muscles which are normally more powerful are placed at an advantage, so that, for example, in hemiplegia the familiar posture of the upper limb is one of flexion with pronation, that of the lower limb being one of slight flexion at the hip and knee, with extension and some inversion at the ankle and a tendency to dorsi-flexion of the toes.

But in *functional paralysis* the conditions are different. Hysteria, we are told, often simulates organic paralysis; that is,

we may have a functional hemiplegia, paraplegia, or monoplegia. But on careful examination we generally find that this similarity is somewhat rough and inaccurate. The posture is not quite the same in organic and in functional contractures. This is because functional contractures are not governed by definite anatomical laws. They usually present some variation, therefore, from the posture of a genuine organic contracture. For example, he referred to a case of functional hemiplegia in which the contracture alone was sufficient to distinguish it from an organic case. Instead of the flexed pronated posture of the upper limb, in this case the elbow and wrist were extended, the hand supinated, and the fingers half-bent into a hook-like posture. And in the lower limb the inversion of the ankle was overdone, out of all proportion to the equinus condition. This contracture developed quite suddenly, as is so often the case in functional contractures. Again, the posture of the foot in walking differs in organic and in functional paralysis. In an organic case of supranuclear origin the heel is drawn up and the foot inverted from weakness of the peronei and over-action of the powerful invertors and calf muscles. The patient therefore scrapes the front part of the sole, near the great toe, along the ground in walking. But in a functional case, the patient either pushes the paralysed foot flat along the ground as if on a skate, or drags it helplessly along with the dorsum resting on the ground.

But although an organic type of contracture is pathognomonic of organic disease, the converse is not always true. In a certain proportion of cases a patient with disseminated sclerosis may have a co-existing paralysis of a "functional" type. One should not be misled by this. In fact, the existence of a functional type of paralysis should always lead us to consider the possibility of disseminated sclerosis in the background. In such cases we should particularly observe the other points which have been referred to in this discussion, especially the history of the case, its occasional remissions, the condition of the reflexes and of the optic discs, and the presence of cholin in the blood, which may point to a gross degenerative lesion. (*See also "Sclerosis, Disseminated."*)

REFERENCE.—¹*Brit. Med. Jour.*, Nov. 1, 1902.

PARALYSIS, (Infantile).

Purves Stewart, M.A., M.D.

Batten,¹ Taylor² and others call attention to the fact that anterior poliomyelitis is only a variety (the commonest variety, it is true) of a disease which may attack any part of the central

nervous system. A group of cases may thus be considered together which, though they vary according to the particular level of the nervous system that is attacked, are all due to the same morbid process. For convenience such cases may be classified into three main groups, but it must not be supposed that the three are sharply divided one from the other, since in many cases symptoms coexist which are characteristic of two or even all three groups.

(1.) *Polioencephalitis superior* includes cases where the cerebral cortex (frontal, motor, or occipital, as the case may be) or the cerebellum is attacked.

(2.) *Polioencephalitis inferior* includes cases in which one or more of the cranial-nerve nuclei are affected.

(3.) *Poliomyelitis anterior*, which is the most common, includes the instances where the grey matter of the anterior cornua of the spinal cord is affected.

The symptoms manifested by these cases vary according to the portion of the nervous system affected, and may be divided broadly into "general" symptoms, common to all cases, and "local" symptoms, dependent on the particular site of the lesion.

General symptoms.—The onset of the disease is acute, with fever, vomiting, and general *malaise*, and with pain in the head, back, or limbs. Paralysis may not be present, or may not be noticed, until a day or several days after the onset. Some cases are attended by convulsions, and this is so not only in cases in which there is a definite cerebral lesion, but also occasionally in those in which the lesion is apparently limited to the spinal cord. The disease is more frequent in summer than in winter.

Local symptoms.—These vary according to the site of the lesion. In polio-encephalitis superior, acute mental changes (such as dementia, dulness, loss of power of talking, carelessness in attending to the sphincters) occur when the frontal lobes are involved, hemiplegia when the Rolandic area is affected, and ataxia if the cerebellum is attacked. The whole cortex may be involved, or the affection may be limited to one hemisphere or a portion of one hemisphere. In polio-encephalitis inferior, paralysis of one or more of the cranial nerves occurs, *e.g.*, squint, facial palsy, deafness, etc. In poliomyelitis anterior there is flaccid paralysis of muscles or groups of muscles according to the site of the cord lesion. In a few of the cord cases the onset is

sudden and painless, but in the majority pain is acute for days or even for weeks. A characteristic point about the pain in such cases is that the child while at rest complains of no pain, but as soon as any attempt is made to move passively the affected limb, the patient screams; the opposite unaffected limb becomes rigidly extended, but the affected limb remains flaccid—a striking contrast to the pain of joint-disease, where we always find rigidity in the affected muscles. Moreover, in cases in which one arm is affected it is not uncommon to observe that the leg on the same side is spastic, with increased knee-jerk and extensor plantar reflex, indicating that the morbid process is not limited to the anterior horn, but has extended to the pyramidal tract on the same side.

With regard to the morbid anatomy of the disease, the lesion in the first stage is characterized by engorgement and thrombosis of small vessels, with perivascular exudation, minute blood-extravasations, and small-cell infiltration of the surrounding tissues. In the second stage there is necrosis of the tissues from which the blood has been cut off, and in the third stage absorption of the necrosed products, with contraction and cicatrization. Two views have been held to explain the pathology of these appearances. According to some observers the condition is due to a specific infection producing an acute inflammation, whilst others maintain that it is a vascular thrombosis due to some altered blood condition, not dependent on one specific infection, but due to various causes. There can be no doubt that the necrosed areas correspond accurately to the distribution of single vessels. In the cord this area corresponds exactly with that of the anterior median artery. The great frequency of anterior poliomyelitis in the lumbo-sacral region seems to favour the view that the condition is primarily vascular, for the anterior cornua in that region are situated at a point most peripheral from the blood supply, *i.e.*, the blood from the vertebral artery has to traverse the whole length of the anterior spinal artery, there being but little collateral anastomosis in that part of the cord. In favour of the infective theory is the well-known occurrence of epidemics of the disease (*e.g.*, Woods' 25 cases,³ Painter's 38 cases,⁴ and Mackenzie's 10 cases⁵) at certain times of the year, and sometimes in several members of the same family. This, however, is not necessarily antagonistic to the thrombotic theory; the infection only supplies the cause of the blood-change.

Pathologically, therefore, cases of acute encephalitis and acute poliomyelitis are identical, although clinically, at first sight, they seem sharply differentiated. And the more frequent recognition of such cases of encephalitis will explain many cases of so-called "meningitis" in which recovery, more or less complete, takes place.

REFERENCES.—¹*Lancet*, Dec. 20, 1902; ²*Jour. Nerv. and Ment. Dis.* p. 449, 1902; ³*Occ. Med. Times*, March, 1903; ⁴*Boston Med. and Surg. Jour.* Dec. 11, 1902; ⁵*Med. Rec.* Oct. 4, 1902.

PARAPHIMOSIS.

Priestley Leech, M.D., F.R.C.S.

Dr. Vincent Hall¹ records a case of paraphimosis where reduction was effected by **Spraying** with a mixture of ethyl chloride and cocaine. The glans was the size of a tennis ball, and had been constricted some forty hours. As the swollen tissues began to freeze they also visibly contracted, and the prepuce was replaced with ease.

REFERENCE.—¹*Mid. Med. Jour.* July, 1902.

PARA-TYPHOID FEVER.

E. W. Goodall, M.D.

During the last few years, cases of a disease bearing this name have from time to time been reported or alluded to in the medical periodicals, and a short account of the condition may be found useful by our readers. It may be said at once that this affection is one that can be diagnosed only bacteriologically. Clinically it is exactly the same as typhoid or enteric fever; so far as the reports of the published cases go, it appears to be impossible to distinguish between typhoid and para-typhoid fever. The mode of onset, the course, the symptoms, the complications, the eruption and the sequelæ are the same. The recognition of the condition has arisen from the systematic bacteriological examination of large numbers of cases that clinically presented the features of typhoid fever. It has been found that a few of these apparently typhoid cases did not give the serum reaction with the bacillus typhosus, even though repeated observations were made. In some of the cases an attempt to isolate the bacillus of typhoid fever has proved unsuccessful; while on the other hand bacilli have been isolated that in the various reactions appear to hold a place intermediate between the typhoid bacillus and the bacillus coli. According to the closeness of resemblance to the one or the other of these organisms, these bacilli have been termed "para-typhoid" or "para-colon" bacilli. In the only two cases in which a *post-*

mortem examination has been made, the intestines have been found to be quite natural.

Our readers may remember that not a few cases have been reported in which, though during life the symptoms of typhoid fever were present, yet after death the usual lesions of the intestine have not been found. Reference was made to these cases in the vol. for 1900 of the *Medical Annual*. Possibly they were, after all, cases of para-typhoid rather than typhoid fever. In some of the cases the infection has apparently been a mixed one of both the typhoid and para-typhoid bacilli. It may be that further investigation will enable us to diagnose clinically between the two infections. At present, however, we can hardly admit "para-typhoid" fever into our nomenclature of diseases.

A good account of three cases by Dr. Herbert W. Allen, with references to those previously published, will be found in the *American Journal of Medical Science* for Jan., 1903.

PAROTITIS, (following Abdominal Section).

A. W. Mayo Robson, F.R.C.S.

Morley¹ has prepared an instructive table of 51 cases of this formidable complication, including one in his own experience. 7 cases were in males and 44 in females: 26 were ovariectomies, and the remaining 25 were operations on the pelvic viscera, oöphorectomy 2, hysterectomy 3, "uterine tumour removed" 3, operation for suppurative peritonitis 1, herniotomy 1, operation for intestinal obstruction 1, enterostomy 1, removal of omentum 1, gastrectomy 1, operation for gastric ulcer 1, removal of vermiform appendix 2, operation for penetrating wound of abdomen 1, operation for bullet wound of the stomach 1, "abdominal section" 5 (2 of these were most probably ovariectomies). Some of the cases entered as "ovariectomies" were probably removal of the ovaries with diseased tubes; thus the author's new case, where a pair of pus tubes were removed with the ovaries and vermiform appendix, is placed under this head. There is no fixed period of incubation; 9 occurred on the third day, 5 on the fourth, 5 on the fifth, 8 on the sixth, and 5 on the seventh; thus the complication appeared between the third and seventh days in 32 out of the 51 cases. The remaining 19 cases ranged from the eighth to the twelfth days, excepting 3, where the parotid began to swell on the second day. In 16 cases both glands were attacked; in 15 the right, and in 13 the

left parotid glands were specified as the seat of inflammation; in 7 the side was not specified. Pus was present in 20, and absent in 31 cases.

The bacteriology of parotitis following abdominal section is very defective, as in a large number of the reports the complication is merely mentioned as an incident in convalescence. The staphylococcus pyogenes aureus was isolated in Bumm's and also in the author's cases; 38 cases recovered and 13 died; pus was detected in 9 out of the 13 fatal cases. Morley maintains that these results justify Stephen Paget's opinion that the deaths were not due to the suppuration of the gland, but the gland suppurated because the patients were going to die.

That the last observation, though frequently true, is not always correct, we can state from personal experience, as on several occasions we have freely incised suppurating parotitis after abdominal operations, and the patients have recovered; and in other cases the inflamed glands have subsided under lead and opium poultices and general treatment.

REFERENCES.—¹*Amer. Gyn.*, Dec. 1902; *Brit. Med. Jour.*, March 7, 1903.

PATELLA, Fractured. (See "Fractures.")

PEMPHIGUS.

Norman Walker, M.D.

Six cases of acute pemphigus are cited by Monfort,¹ where the eruption was confined to the mucous membrane of the upper part of the respiratory and digestive tract, with no accompanying cutaneous eruption. The treatment adopted was **Liquid Diet**, with a **Gargle** of borax and bromide of potash in glycerin, and decoction of **Marsh-mallow Root**.

Grosvenor,² in a full summary of the disease, states that the fact that it generally attacks the old and enfeebled, or young and poorly nourished, points to a line of treatment which is supporting. **Quinine** and **Arsenic** are the chief drugs recommended; dusting powders, and in severe cases the continuous bath, are useful local measures.

Heine³ records a successful result following exposure to the **Arc Light** in a very chronic case which had lasted two years, and resisted all other methods. The ultra-violet rays were used with a current of 15 ampères, and even after the first exposure improvement was noticed. Nine sittings spread over thirteen days left the patient well. Two bullæ, apparently caused by scratching, appeared subsequently, but the application of blue

light for twenty minutes caused their disappearance. The result he attributes to the bactericidal action of the light rays.

Coe,⁴ dealing with the significance of eosinophilia, which he finds to be greater in recovering cases, suggests that it may be comparable to the leucocytosis in pneumonia, and may mean a more favourable prognosis.

Ten cases of a bullous eruption closely resembling true pemphigus are described by Howe⁵ as occurring after vaccination. The eruption appeared in from three to sixteen weeks after vaccination. Six of the cases died.

REFERENCES.—¹*Rev. de Laryn. Derm. et de Rhin.* March 22, 1902 ; ²*Buffalo Med. Jour.* April, 1902 ; ³*Deut. Med. Woch.* July 22, 1902 ; *Treatment*, Sept. 1902 ; ⁴*Amer. Med.* vol. iii, No. 26 ; ⁵*Amer. Jour. Cut. Dis.* June, 1903.

PENIS, (Indurations and Fibrous Tumours of Corpus Cavernosum).

Priestley Leech, M.D., F.R.C.S.

This condition is somewhat rare, and Trillat¹ has a useful article on the subject. Among English authors Sir J. Paget, Kirby (of Dublin), Cameron (of Glasgow), and Jonathan Hutchinson have written about it. Trillat thinks it occurs more frequently than the published cases would lead one to believe. Penile indurations may be divided into two great groups :—(1,) Primary indurations which occur spontaneously, and (2,) Secondary indurations, the result of a well-ascertained local cause.

(1,) *Primary indurations* may be divided as follows :—

(a,) Arthritic (gout, diabetes, and rheumatism). Like other arthritic manifestations, they usually appear at an advanced age, their progress is slow and insidious, and they remain stationary, undergoing neither absorption nor degeneration.

(b,) Indurations due to some general cause other than arthritism. Less is known about this group. Indurations have been described as following after small-pox, enteric, pyæmia, and typhus. The penis is continually erected and painful.

(c,) Indurations apparently due to no known cause either local or general.

(2,) *Secondary indurations* may also be divided into three groups :—

(a,) Inflammatory, most frequently gonorrhœal. The formation of the node is due to the infection of the submucous tissue and the corpus cavernosum ; it is rare after acute gonorrhœa,

but often occurs after old chronic urethritis. Neumann has reported cases of soft chancre which have been followed by a fibrous induration.

(*b.*) Syphilitic. These may occur during the primary period, and have then often been confounded with chancres with a persistent induration; they are much more frequent during the tertiary period, and occur a long time after the primary sore. It is the "syphilitic cavernitis" of French authors, and the "gumous cavernitis" of Lang. Some authors (Tuffier, Mauriac) do not believe in the existence of these syphilitic indurations. Lang has seen the transformation of the gumma into a hard tumour, which in some cases became osseous.

(*c.*) Traumatic. Under this heading come the most varied causes, *e.g.*, rupture of the cavernous body during coitus; false passages made by bougies or catheters; cuts, punctures, blows, and tears of the organ may lead to a similar condition. Even injections made too violently may cause indurations.

SYMPTOMS.—The nodosities may be single or multiple; more frequently single, but there may be several in the same patient. When single they have a smooth surface, are round or elliptical in shape, and hard; they may be median or lateral, and one or both sides of the penis may be affected. The seat of election is on the dorsum of the penis in front of the symphysis; the skin over them is normal, but the tumours are adherent to the deeper parts, and seem to become part and parcel of the erectile tissue.

In the traumatic, syphilitic, and blennorrhagic cases there is a deep attachment to the erectile tissue; in the arthritic and spontaneous cases the attachment is in the fibrous coverings of the cavernous bodies. Their outline is rarely visible externally. In the flaccid condition of the penis there is no pain nor tenderness, and micturition is painless; but erection and ejaculation of semen are attended with various difficulties. During erection the penis is curved to one or other side, or upwards or downwards, the curvature always being towards the side of the lesion, and the penile "squint" being horizontal when the node is in the lateral parts of the cavernous body, but vertical when it is in the middle line, being upward when the node is in the dorsum, and downwards when it is in the inferior part. The most frequent direction is vertically upwards, as the dorsum is the most frequent seat of the node. When the whole thickness of the corpus cavernosum is affected, the part behind the node

alone becomes erected, the part in front becoming flaccid and mobile, like the second part of a flail, as Ricord describes it. If the nodes are multiple and non-symmetrical, the penis during erection assumes a sinuous form. Ejaculation is also delayed until the curvature is straightened. Coitus is impossible where curvature is present. In younger people the condition renders them irritable and nervous, and they may attempt suicide.

There is some dispute as to the anatomical seat of these lesions ; some (Cruveilhier, Ricord, Nélaton, Mauriac) say they are in cicatricial tissue ; others (Tuffier, Verneuil) place them in the fibrous envelope or septum. As a matter of fact the seat of these indurations varies according to their cause. The traumatic, inflammatory, or blennorrhagic indurations are in the interior of the corpus cavernosum ; the diathetic indurations and those with no cause are in the septum or albuginea. Ricord said the process was the result of a plastic phlebitis, which will explain those having a local causation ; Nélaton suggested a rupture of the erectile tissue and sanguineous exudation followed by induration, which explains the traumatic cases. Tuffier says (a suggestion first made by Verneuil) the point of origin is a degeneration of the envelope of the cavernous body, with hypertrophy of fibrous tissue, and looks upon the affection as an exaggeration of a physiological phenomenon, as in old age the elastic fibres have a tendency to disappear and be replaced by fibrous tissue.

TREATMENT.—In specific cases specific treatment ; if seen early absorption may take place ; the fibrous indurations resist all treatment and are not absorbed. Local baths, **Arseniate of Soda** internally, and **Mercurial Plasters** seem to have done good in some cases. Removal, except in the solitary tumours, is impossible ; **Electrolysis** appears to have aided absorption. Any attempt at forcible reduction of the curvature will only make matters worse.

REFERENCE.—¹*Gaz. des Hôp.* Sept. 20, 1902.

PERICARDITIS.

Prof. A. H. Carter, M.D., F.R.C.P.

Under the title of multiple serositis, Dr. Kelly¹ treats very fully of cases in which general pericardial adhesion is associated with ascites. He recognizes it as an expression of a general tendency to chronic inflammation of the various serous membranes of the body. It is sometimes confined to one or two serous surfaces—usually the pericardium and both sides of the

diaphragm—but often it involves the liver (peri-hepatitis), the spleen, and the pleura. The lesions are frequently characterised by the formation of thick, fibrous, almost cartilaginous masses of connective tissue, that encase, compress, and sometimes distort the affected organs. The striking clinical feature is ascites, which may be the only symptom for many years, and is probably due to the peritonitis and perihepatitis. The disease is slow, insidious, and intermittent in its progress. Apart from the ascites, the clinical picture varies according to the parts that are involved. The ascites is generally excessive, it necessitates frequent tapplings, it recurs rapidly after tapping, or it may remain stationary (without needing tapping) for many years. In some cases, ascites occurs without obvious explanation by abdominal lesions; and, under these circumstances is possibly due to congestion of the liver from heart-failure.

In the DIAGNOSIS of the condition, special attention should be directed to the history of previous acute pericarditis, pleurisy, or perihepatitis; to the early occurrence and subsequent disappearance of œdema of the legs; to the marked ascites without œdema of legs; to early enlargement of the liver followed by contraction in the later stages; to the absence or very late appearance of enlargement of the spleen; to the occurrence of pain, tenderness, rigidity, and possibly palpable and audible friction in the right hypochondrium; to the rapid recurrence of fluid after tapping; and to the physical signs of adherent pericardium. The chief signs of such adhesion are: a weak or absent apex beat; systolic retraction of the intercostal spaces about the apex, and at the base of the left chest posteriorly; arrest of epigastric movement in breathing, immobility of the apex beat on deep inspiration and change of posture; absence of change in the limits of cardiac dulness during respiration; absence of extension of cardiac dulness to the right, despite marked engorgement of the veins of the neck; a diastolic shock on palpitation; evidence of cardiac enlargement in the absence of valvular or other disease that might cause it; absence of pericardial effusion in the presence of pleural or peritoneal effusions; paradoxical pulse; diastolic collapse and inspiratory swelling of the veins of the neck.

No one of these signs is pathognomonic, and all of them are seldom present, but sufficient may be present to make a diagnosis. It is distinguished from ordinary cirrhosis of the liver by the signs of adherent pericardium; by the absence of the

usual etiological factors of cirrhosis ; by the very slow progress ; by the absence of jaundice ; by the absence of obvious portal obstruction ; and by the fact that the patient survives many tapplings. The whole article deserves careful study.

TREATMENT.—According to Huchard² the best preventive measures are absolute **Rest** and *full* doses of the **Salicylates**, 5j to 5ij daily for an adult, and at least 5ss daily in children from two to five years of age, in divided doses ; and he insists upon maintaining the salicylate influence for eight or ten days after the disappearance of joint-pains. In the developed disease he gives precedence to local **Abstraction of Blood** from the precordia, by leeches, or scarification and wet cups. **Cold** applications, such as the ice-bag, may be useful, but he disapproves of the local application of heat. **Opiates** and **Musk** may be given as nervous sedatives and to relieve pain. **Digitalis** is indicated only if there is marked nervous irritability, palpitation, and frequent pulse. The diet should consist chiefly of milk and vegetables ; and, if the pulse pressure be high, he advises the **Nitrites**.

REFERENCES.—¹*Amer. Jour. Med. Sci.* Jan. 1903 ; ²*Jour. des Prat.* Nov. 1, 1902.

PERI-HEPATITIS.

Robt. Hutchison, M.D.

A. G. Nicholls¹ in a monograph on "Multiple Progressive Hyalo-serositis," studies in detail the relationship of such local conditions as chronic peri-hepatitis and peri-splenitis to inflammation of the serous membranes in general. Though the chronic hyperplastic overgrowth of connective tissue, together with hyaline metamorphosis, may be almost confined to the capsule of the liver, it is usually part of a generalised lesion affecting in turn one serous membrane after another. There are two clinical types of chronic hyaline perihepatitis : (1) Primary perihepatitis, in which ascites is the leading feature. After a time the disease spreads to the right pleura and pericardium ; the liver and spleen are usually enlarged. (2) Primary pericarditis, in which the earliest symptoms are those of adherent pericardium or indurative mediastino-pericarditis. The process spreads to the right pleura, and eventually to the capsule of the liver. In both forms jaundice and gastro-intestinal hæmorrhage are absent ; the urine is diminished, and rarely contains albumin. The cases last from two to sixteen years, and usually die from some acute infection, such as pneumonia. After death the body is emaciated, though this is usually somewhat masked by anasarca ; the super-

ficial abdominal veins are dilated ; ascites is extreme, the fluid being straw-coloured and rich in albumin (3 per cent), so as to suggest an inflammatory exudation rather than a passive transudation. The omentum is rolled up into a fibrous cord, and may contain hydropic cysts. The "Zuckerguss" membrane rarely covers the whole of the liver, and is more marked on the convexity ; it is composed of successive layers of fibrous tissue, which are swollen from hyaline degeneration. In the deeper layers, and between it and the underlying capsule, which is thrown into folds, there are collections of leucocytes and mast-cells. No fibrin-reaction is obtained. There is very rarely any cirrhosis of the liver. The question whether the change is due to passive engorgement or to inflammation is discussed at length ; and the conclusion is reached that the condition is definitely inflammatory, and probably due to infection with micro-organisms of a somewhat low grade of virulence, but capable of sclerogenous effect. The micro-organisms likely to produce this effect are the *B. tuberculosis*, *typhosus*, and *coli*. The parts especially affected by this chronic hyaline peritonitis, viz., the upper surfaces of the liver and spleen, and the bases of the lungs, are in a constant state of unrest ; and thus, when they are once inflamed, irritation is kept up. The progressive lesion may commence in the peritoneum, pericardium, or pleura, the first being the commonest seat of origin. Nicholls does not consider that granular kidney plays an important part in the production of chronic hyaline peritonitis.

REFERENCE.—¹*Studies from Roy. Vict. Hosp. Montréal*, April, 1902.

PERITONITIS, (Tubercular).

Robt. Hutchison, M.D.

ETIOLOGY.—Comparatively little work has appeared during the past year to throw light on the causation of tubercular peritonitis. Koch's experiments and conclusions on bovine tuberculosis and its communicability to the human subject have called for a re-examination of the evidences for and against infection by milk, and we may expect important communications in the near future. Cautley¹ in a recent paper discusses the etiological factors of tubercular peritonitis in children ; he considers these under three headings: (1) The soil, *i.e.* the primary, physical constitutional state of the subject, dependent on inheritance ; (2) The manures, or all those influences or modifications of the soil as a result of environment ; (3) The seed, *i.e.* the tubercle bacillus.

In reviewing the question of direct inheritance, it is almost inconceivable that the microscopic spermatozoon can actually contain the bacillus even in spore form and convey it to the ovum, while more probably the infection of a sperm-cell would impair its nutrition and render it useless for the purpose of impregnation. Similarly it is equally improbable that an infected ovum could be satisfactorily impregnated and carry out developmental processes. But he urges the probability of infection of the future child during pre-natal existence, and points out the possibility of tuberculosis of the placenta, or indeed that, short of this, the bacillus may pass from the maternal blood to that of the fœtus. In support he cites experimental evidence. Gärtner, as the result of inoculating the mother, intra-peritoneally or intravenously, produced tuberculosis in young mice. A calf has been found tuberculous at birth. Bacilli have even been found in the human fœtus, removed by Cæsarian section from a tuberculous mother. Many infants show such advanced tuberculosis of the lungs (and note that it is usually of the lungs) a few months after birth, as to render fœtal infection a suggestive explanation. On the other hand, in most of these instances, the mother had given no evidence of tuberculosis, and there has often been a history of exposure to infection. Even if there be no tuberculosis in the mother, as in the case of a child of six months under his care, in whom extensive tuberculosis of the lungs was found, the probability of direct infection is enormous. In a case of Stiegenberger's a babe died at five months from extensive tuberculosis. The parents were healthy, but the babe had been nursed by a tuberculous nurse. In the bulk of the supposed inherited cases of tuberculosis we shall find on careful investigation evidence of direct infection, rather than of infection through the medium of a germ cell or maternal blood supply.

DIAGNOSIS.—Edmund Owen² draws attention to the insidious character of the early symptoms, and compares the absence of complaint in early tuberculous peritonitis with the like lack of symptoms in tubercular affections of the epididymis or vertebral bodies. Occasionally miliary tubercles are found in the peritoneum exposed during operation for quite different reasons, whose existence was entirely unsuspected. The earliest symptoms are often only those of a dyspeptic nature, or there may possibly be gripings, with either constipation or diarrhœa and perhaps vomiting. The characteristic feature is that the patient

steadily wastes. In cases with effusion, the serous fluid is sometimes locked up by adhesions of viscera in separate and distinct cavities. Together with the effusion there are sometimes to be made out hard masses of omentum, which have been rolled together and glued to the thin abdominal walls in one or more situations. These masses he regards as always highly suggestive of the case being tuberculous. Elevation of temperature, though common, is not constant.

James Barr³ points out how frequently there is little or no inflammatory reaction, and suggests therefore that tuberculosis of the peritoneum is a more appropriate name. In some cases he has found the injection of the peritoneal fluid into guinea-pigs of value in the differential diagnosis.

Shattuck⁴ has found the injection of **Tuberculin** a useful aid to diagnosis in doubtful cases; he uses a 1 per cent solution of Koch's 10 per cent tuberculin, 7 to 10 minims for a dose. Reaction consists in a rise in temperature (it may reach 105°) with constitutional disturbance, as chilliness, headache, pain in the back, or *malaise*; out of 13 cases, in 8 the reaction was positive. He quotes two cases diagnosed as tubercular peritonitis, which did not react to tuberculin, in whom operation showed other pathological states to exist. In two-thirds of his series of 98 cases there was no leucocytosis. In reviewing the series he gives the following conditions as having been mistaken for tubercular peritonitis, the mistake being shown at operation or autopsy: tuberculosis of retroperitoneal glands and pericardium; fibroma of ovary; lympho-sarcoma of mesenteric glands and intestines with perforation and general peritonitis; scirrhus cancer of stomach with cancerous peritonitis; retention cysts with chronic peritonitis; colloid carcinoma; adenocystoma of ovary. Several of the cases, entering with high temperature, abdominal distension, and absence of leucocytosis, were at first considered to be cases of typhoid.

Carpenter⁵ in relating his experiences of a series of ninety-one cases, mentions the usefulness of an examination of the eye-grounds in doubtful cases, where tubercle of the choroid may at once decide the diagnosis. He urges the importance of rectal examination, either with or without an anæsthetic, in all cases. He claims that by means of an examination conducted in this way, not only can the whole of the true and false pelvis be explored, with its contained organs, but in young children, from birth to four or five years of age, it is possible to examine a considerable

area of the abdominal cavity outside the pelvis. Not only can abdominal lumps and tumours generally be explored with great ease by such an examination, but it is also possible to detect an amount of peritoneal thickening which would escape the most careful abdominal examination conducted in the ordinary way. In the healthy abdomen, the finger in the rectum and those on the abdominal wall should be separated by what appears to be the thickness of the abdominal wall merely, but when there is peritoneal exudation the separation of the examining fingers is often found to be more than that; thus, in the same case, one part of the abdomen may be found normal, and another appreciably thickened. Comparison here comes in useful. Before such an examination is undertaken an enema should be given, the bowel cleared of its contents, and the bladder emptied; this will facilitate examination and prevent errors in diagnosis.

In malignant disease there is often the same rolling up of the omentum when this part is attacked, and tumours, similar to the touch to those met with in abdominal tuberculosis, may be felt through the abdominal walls. Reaction to the tuberculin test is of value in such cases. There are other abdominal conditions which may occasionally give rise to a mistaken diagnosis. In young children the urachus and obliterated umbilical vein may be felt through the abdominal wall as indurated cords—a knowledge of this will prevent error. Ovarian tumours, cystic, malignant, and dermoids, may also prove puzzling, and rectal exploration should here prove of value. The full abdomen seen in infants and young children suffering from gastro-intestinal catarrh may, on inspection, suggest the idea of tuberculous peritonitis, but a rectal exploration should here render valuable assistance and prevent any error in diagnosis.

TREATMENT.—The so-called “medicinal” treatment of tubercular peritonitis consists mainly in the adoption of those measures which have been shown to be most successful in combating tuberculosis in other regions of the body: viz., abundance of fresh air, systematic over-feeding, and the symptomatic treatment of such troubles as pain, flatulence, indigestion, diarrhoea, or vomiting. **Absolute Rest in Bed** must be insisted on while there is reason to believe active changes are in progress. **Mercury** is the one drug still in general use as exerting a possible resolvent action on chronic tuberculous inflammation. It is best used as inunction of the oleate 10 per cent, regularly rubbed into the skin of the abdomen. Some authorities recommend **Arsenic** in

increasing doses. **Guaiacol Carbonate** and **Iodoform** enjoy a limited repute. Treated on these lines, a very considerable proportion of cases recover completely. It is equally true that other cases as progressively deteriorate in spite of such treatment.

The happy results which frequently follow simple **Laparotomy** and letting out the fluid, in tuberculous peritonitis with ascites, are well known. The difficult question arises as to when to adopt surgical intervention? Physicians as a whole perhaps tend to postpone operation too long, and surgeons to propose it unduly early. Ascitic cases are without doubt those in which surgical treatment gives the best results.

Guthrie⁶ in discussing the radical treatment of the ascites, recommends the adoption of **Aspiration** in some cases. He considers that in acute cases, unless fluid produces great distension and distress, it is inadvisable to interfere, for if removed it will speedily re-accumulate. Surgeons have discovered that laparotomy is seldom of use in such cases, but, as in some cases of pleural effusion, the withdrawal of a few ounces of fluid is sometimes sufficient to cause absorption of the rest. The supposed danger of setting up general tuberculosis by absorption of the fluid into the circulation is unfounded. In more chronic cases, when fluid shows no tendency to subside, he considers it should be withdrawn. Tapping or aspiration in such cases, unless one is certain that the fluid is free, is dangerous. It is better to make a small incision and insert a blunt perforated trocar, than to plunge a sharp instrument through the abdominal wall at the risk of wounding adherent intestines. He adds that this treatment may be ineffectual, and the case should then be treated by simple incision or laparotomy.

Edmund Owen² calls attention to the interesting fact that after surgical treatment for tubercular peritonitis, improvement and indeed apparent cure may result in tuberculous processes in other parts of the body. He quotes a case of his own, as well as others in the literature. This is of importance as showing that the presence of tubercle elsewhere need not necessarily preclude the advisability of operation. He does not consider that at present there is any satisfactory explanation of the way in which tubercular peritonitis is relieved, and in many cases cured by an incision into the abdomen. Is it by letting in air, or letting out fluid? It is certainly not due to the treatment of the peritoneum by antiseptics, as was at first surmised, for no antiseptics

are now used in this connection in these operations, and the result remains the same.

Porter⁷ considers the importance of the curative effect of **Light** and **Air** in the operative treatment of tubercular peritonitis to be under-estimated. He maintains the best results have followed those operations in which the peritoneum was freely exposed both to light and air. He argues that the operative procedure should be such as to give the patient the benefit of as many of the known curative agencies as is possible with the use of good judgment. Incision should be free; fluid, if present, completely removed; tubercular foci, if accessible and not too numerous, should be removed. Adhesions should not be disturbed save when necessary for the removal of tubercular deposits, fluid, or the relief of bowel obstruction. An exception to this rule should be made in those cases in which the adhesions are easily separated, and extensive enough to prevent free access of light and air. Drainage should not be used except in cases of mixed infection. Lavage with hot water may be beneficial. Chemical antiseptics should not be used save in mixed infections. The abdominal cavity should be freely exposed to light and air for several (ten to fifteen) minutes. There seems reason for believing that the efficiency both of the **X-rays** and **Actinic Light** in the treatment of tubercular lesions, is much enhanced by exposure of the lesion to the direct influence of the rays. In case the actinic light or the X-ray is not available, the cavity and contents should be freely exposed, for several minutes, to the strongest light that is available.

Shattuck⁴ carefully reviewed a series of 98 cases (including their after histories) and came to the following conclusion, which may be taken as fairly representing the present attitude of the profession on the question of "medical" and "surgical" treatment.

(1,) Tubercular peritonitis may be followed by apparently complete recovery, even if complicated by tuberculosis elsewhere, either under (a) Purely medical treatment; (b) Tapping; (c) Incision.

(2,) As in other forms of internal tuberculosis, the best obtainable hygienic surroundings are all-important. Consequently no patient should be kept in hospital longer than is necessary, especially if more and better air can be obtained outside with proper care and food.

(3,) We are warranted in trying medical treatment for a time,

especially under first-rate hygienic conditions, tapping the abdomen if there is sufficient fluid to cause discomfort.

(4.) If the patient under a month or six weeks of medical treatment fails to improve, or in even less time if he seems to be losing ground, surgical treatment should be advised.

REFERENCES.—¹*Med. Press*, Dec. 31, 1902 ; ²*Lancet*, Oct. 25, 1902 ; ³*Med. Press*, Dec. 24, 1902 ; ⁴*Amer. Jour. of Med. Sci.* July, 1902 ; ⁵*Med. Press*, March 18, 1903 ; ⁶*Ibid.* Dec. 14, 1902 ; ⁷*Jour. of Amer. Med. Assoc.* Sept. 13, 1902 ; *Therap. Gaz.* Feb. 1903.

PERITONITIS, (Surgical Treatment of).

A. W. Mayo Robson, F.R.C.S.

What gives special interest to surgical affections of the abdomen is the fact that the viscera are invested in whole or in part by the large serous peritoneal sac, and that infection, however communicated, is apt to assume serious proportions, involving not only the whole abdominal cavity but the system at large. The diagnosis of peritonitis used to be made with great satisfaction, as if it were final and sufficient ; but who, at the present time, with any claim to scientific knowledge, would be content with a mere name that gives no idea of the disease to be treated, or of the cause of the illness ?

Peritonitis so-called is an infection pure and simple of a large serous sac, and the symptoms will vary with each form of organism, whether streptococcus, pneumococcus, gonococcus, or bacterium coli, as well as with the amount of toxin absorbed.

Accepting this view, we cannot be astonished to find an acute infection associated with a lowered temperature and a rapid small pulse. This paradox is so characteristic, that for years one has been teaching pupils to look on a subnormal or even a normal temperature combined with a rapid pulse as serious in surgical diseases of the abdomen, and as indicating absorption of toxins. If the disease were a true inflammation, we should look for the cardinal symptom, fever, which is absent in these toxæmic cases. The discovery of the frequency of perforative appendicitis, of perforating gastric ulcer, and of other peritoneal catastrophes is gradually abolishing the term acute peritonitis for the more rational one of acute peritoneal infection, for the treatment of which surgery alone is of any use ; and even for it to be of service operation must not be long delayed.

These more rational views of pathology and treatment have originated and developed within recent years, and I can recall case after case, during my student days, in which peritoneal

catastrophes ended fatally, where now we should by timely interference give a very fair chance of life. Could anything show this more definitely than the results of treatment of perforated gastric ulcers, which if operated on at once would have hardly any mortality, if within twelve hours of rupture have a mortality of 16·6 per cent, if within twenty-four hours, 63·6 per cent, if within thirty-six hours, 87·5 per cent, and if delayed for forty-eight hours will only rarely succeed; or to give another example, than the results of surgical treatment of the intestine in typhoid fever, alas! too seldom resorted to. To give an example kindly obtained for me by Dr. P. J. Cammidge: Out of a total number of 900 cases of typhoid fever occurring in St. Bartholomew's Hospital in the years 1895 to 1901, there were 102 deaths. Among the 900 cases were 38 of perforation, of which 34 died unoperated on, whereas of the 4 operated on 3 recovered. Could operation have been done in the remaining cases it would seem possible that 25 more lives might have been saved. In Professor Osler's clinic, out of 11 cases 5 were saved by operation. Intimately related to intestinal perforation is perforation of the gall bladder in typhoid fever, of which 34 cases have been collected by Dr. Erdmann, of New York; of these 27 were not operated on and all died, but of the 7 which were operated on 4 recovered. As spontaneous recovery from perforation is extremely rare, it is of the utmost importance that not only should we have an early recognition of the perforation, but also an immediate operation.

Prevention of Intestinal Paralysis after Abdominal section.—Humiston¹ states, the most important points are to abstain from using morphine, and if the patient is restless and a narcotic drug seems necessary, to use **Atropine**; to remember to watch the patient carefully during the first twenty-four hours, and when she regurgitates liquid, or is nauseated, or even disinclined to take nourishment eighteen hours after operation, is slightly tympanitic, and has passed no gas or faecal matter from the bowel, he must at once institute active measures for the sufferer's relief. If his diagnosis is correct, his efforts will be promptly crowned with success, and in a few hours the patient will be out of all danger of an untimely end.

Tubercular Peritonitis.—All surgeons must have had the experience of curing tubercular peritonitis by simple abdominal section, with or without drainage, and many of us have also experienced disappointment in other cases where the effusion

has returned after longer or shorter interval. The explanation of these recurrent cases may lie in the fact that the original focus of the disease in the ovaries, tubes, or intestines, has not been removed, and has been again the starting point for a further effusion of the tubercle throughout the peritoneal cavity. If this be the correct explanation, the remedy is quite clear, that wherever the original disease may be, it should be removed, if that be possible without adding seriously to the risk of operation. In a paper on the treatment of chronic intestinal tuberculosis,² I have reported a number of cases bearing on the question.

REFERENCES.—¹*Jour. Amer. Med. Assoc.*, Sept. 13, 1902; ²*Lancet*, Sept. 27, 1902.

PERTUSSIS.

G. F. Still, M.D.

ETIOLOGY.—For some years the belief that pertussis is bacterial in origin has been gaining ground, and there are now several claimants to the post of bacterium-in-ordinary to this disease. Afanassjew discovered numerous bacilli in the sputum in pertussis, and Köplik obtained pure cultures of a small bacillus with rounded ends by culture of the sputum on solidified hydrocele fluid; Jochmann and Krause¹ report a similar bacillus, small and very thick in proportion to its length, which micro-organism resembles the bacillus described by Eppendorf as the "bacillus pertussis." Vincenzi² has isolated a bacillus which appears to be identical with Eppendorf's. Magennis³ believes that the origin of this complaint is located in the Schneiderian membrane of the nose, and thinks the bacilli find a nidus here. Neumann⁴ has studied the relation of viscosity of sputum to cough, and comes to the conclusion that, contrary to what might be expected, the sputum sometimes becomes more viscous as the paroxysms of cough become more mild, and that there is no constant relation between the viscosity of expectoration and the severity of the paroxysms of coughing. Hence he doubts the efficacy of therapeutic measures directed towards making the sputum less viscid.

TREATMENT.—Most of the recent methods of treatment arise out of the various theories of infection which have been put forward. One can only fear that the unfortunate child with whooping-cough is likely to suffer from much more than its disease, if it is to be subjected to some of the latest "cures." From Brussels comes an "**Anti-pertussis Serum**" devised by Leureaux,⁵ who states that he has succeeded in stopping pertussis in a week or ten days when the serum was injected

during the early stage of the disease. Silvestri,⁶ unable to obtain a therapeutic serum from dogs, has bled convalescent patients to the amount of about 4 ounces, and inoculated other whooping-cough patients with the serum thus obtained. "The general symptoms were immediately lessened, and soon disappeared."

Magennis has treated whooping-cough by **Nasal Irrigation** with a 1 in 40 solution of **Carbolic Acid** with a little glycerin added. Three 2-ounce syringefuls were injected into each nostril three times a day. This was thought to diminish the frequency of the paroxysms and to reduce the duration of the disease. It is to be noted that the syringe is provided with an indiarubber nozzle, so that "it could not do any harm, no matter how the child struggled," and he adds, "It is a good plan to bind down the arms with a towel or binder before using the syringe."

Sobel⁷ advocates a **Manipulative Method** of arresting the paroxysms of whooping-cough, which was originally suggested by Nægeli, namely, pulling the lower jaw downward and forward, as is done in chloroform anæsthesia to facilitate respiration. In 96 cases he met with only 9 in which this method had no effect on the paroxysm; in infants and young children it was less effectual than in older children, probably because it frightened them, and made them cry, and so rather increased the severity of the paroxysm. The mother or nurse can easily be instructed to carry out this simple procedure, and if the attacks can be arrested thus, no doubt the risk of some at least of the usual complications of whooping-cough is minimised. The only contra-indication to its use is the presence of food in the mouth or œsophagus.

Voelcker,⁸ in a lecture, concludes that no single method could be called a specific for the disease. **Antipyrine**, **Belladonna**, and **Citrophen**, gave on the whole the most satisfactory results; **Heroin** certainly relieved the paroxysms. **Carbolic Acid Spray** was used in four cases, with slight improvement in two, and none in the other two. Baumel⁹ uses a carbolic spray (1 in 40) twice or thrice daily for twenty minutes; the spraying is performed at the distance of a yard or more from the patient's head. This treatment may produce a slight conjunctivitis if the eyes are not protected by a bandage; but it reduces the number and intensity of the paroxysms, and cured cases in as short a time as nine days, and in one case in one day. Arnat¹⁰ recommends

inhalation of **Iodide of Ethyl**; **Formalin** is also, according to Cenex,¹¹ valuable for inhalation. **Cochineal**, according to Hesse,¹² has some special virtue in pertussis. He gives about $\frac{3}{4}$ to 1 grain, with about $1\frac{1}{2}$ grains of **Potassium Carbonate**, in distilled water every two or three hours. **Ozone** is of value, so Delherm¹³ states, in the spasmodic stage of whooping-cough; it should be used in three or four inhalations of mildly ozonized air or oxygen for ten minutes daily.

Trephining may be advisable, according to Loewy,¹⁴ when cerebral hæmorrhage occurs as a complication of pertussis, but only when the symptoms of hæmorrhage are becoming pronounced and the pulse shows increase of intracranial pressure.

REFERENCES.—¹*Med. Press*, Oct. 2, 1901; ²*Centralb. f. Bakt. in Brit. Med. Jour.* July 26, 1902; ³*Lancet*, Nov. 30, 1901; ⁴*Arch. f. Kinderh. in Arch. Ped.* March, 1903; ⁵*Med. Rec.* Nov. 1, 1902; ⁶*Gaz deg. Osped. in Brit. Med. Jour.* Dec. 14, 1901; ⁷*Arch. Ped.* June, 1903; ⁸*Clin. Jour.* Nov. '5, 1902; ⁹*Nowv. Montpellier Méd. in Med. Rev.* Feb. 1902; ¹⁰*Med. Press*, Sept. 3, 1902; ¹¹*Bull. Health Dept. Chicago, in Treatment*, April, 1903; ¹²*Therap. der Gegenw. in New York Med. Jour.* Nov. 23, 1901; ¹³*Bull. Gen. de Théráp. in Arch. Ped.* May, 1903; ¹⁴*Deut. Zeits. f. Chirurg. in Arch. Ped.* Jan. 1903.

PHARYNX, (Disease of). (See also "Larynx" and "Tonsils.")

H. Lambert Lack, M.D., F.R.C.S.

Acute septic Inflammation of the Throat.—De Santi¹ reports four cases, in all of which streptococci were found on bacteriological examination. He recommends that these cases should be treated with **Antistreptococcic Serum**.

Dysphagia of acute Anginas.—The following is attributed to Regin:²—

R Powdered Talc	Orthoform	1 gram.
Powdered Boric Acid	Cocaine Hydrochloride	0.05 gram.
Powdered Lactose aa 2 grams.	Powdered Menthol	0.02 gram.

M. ft. pulv. A small quantity to be insufflated in the patient's throat through a tube during inspiration, a few minutes before taking food.

Major Operations on the Throat.—Butlin³ discusses the dangers of these operations and the means of preventing them. The great danger of blood entering the air passages during the anæsthesia, thus increasing the dangers of the anæsthetic, and leading to subsequent septic pneumonia, can be best averted by performing a preliminary laryngotomy, and plugging the upper part of the larynx or the pharynx with a large sponge. This plan, originally advocated by Bond at the Laryngological Society in 1899, he has followed in a large number of cases with excellent

results. The operation of laryngotomy is trivial, quickly performed, and the tube is taken out immediately after the major operation.

Malignant disease of Naso-pharynx.—Quinlan⁴ recommends Dawbarn's new operation of ligation and excision of the external carotid artery and its branches, as the routine treatment for all inoperable cases of malignant disease of the naso-pharynx and pharynx. No parallel treatment can furnish such a quota of excellent results. He states that malignant disease in this neighbourhood makes very rapid progress, and that the prognosis is unfavourable. In the early cases surgical interference must be insisted upon just as soon as the diagnosis can be made.

Syphilis.—Lieven, of Aix-la-Chapelle,⁵ says that of all the three methods of administering **Mercury**, inunction is the most active. The prolonged action obtained by its slow absorption is especially valuable in the treatment of syphilis of the mouth and throat, on account of the marked tendency to recurrence. He recommends that on the appearance of secondary symptoms, but not before, the patient should have a course of forty-two inunctions. Then for a year and a half a similar course every six months. If no symptoms appear after the end of the first year, the fourth course of inunction is postponed until twelve months after the third. Unfortunately there are only too many cases in which secondary lesions obstinately recur, and there is not the slightest doubt that the more frequently general mercurial treatment is undergone for this recurrence, the less effective does it become, until finally it has no effect at all. In such cases the **Iodides** occasionally stop the recurrence, but local treatment is of the greatest value. Lieven recommends that the mouth be carefully washed out every half-hour with an antiseptic mouth-wash, and at the same time he burns plaques every second or third day with 60-90 per cent of **Chromic Acid**. In conclusion he adds that in addition to the iodides and mercury, **Sarsaparilla** is of considerable value. Not only gummatous, but also secondary conditions often yield to sarsaparilla when every other treatment has been used in vain.

REFERENCES.—¹*Lancet*, Feb. 14, 1903; ²*Progres Méd.* Jan. 3, 1903; ³*Clin. Jour.* Dec. 10, 1902; ⁴*Laryngoscope*; ⁵*Jour. Laryng.* May, 1902.

PHTHISIS. W. J. Hadley, M.D., F.R.C.P., F.R.C.S.

CAUSATION.—*Heredity.*—Dr. Arthur Latham¹ has lately put forward the theory that the children of tubercular patients, far from having a tendency to the disease transmitted to them,

have received a certain amount of congenital immunity. This theory is apparently based on two main points : (1) The analogy in certain other diseases, such as anthrax, in which the offspring of animals rendered immune have a certain amount of immunity conferred upon them, at least for one generation ; (2) That the incidence of the disease in the children of tubercular and non-tubercular parents shows but little difference ; and bearing in mind the much greater probability of infection in the offspring of the tuberculous, it would seem that there was a certain amount of immunity conferred, rather than a tendency to the disease.

Dr. Geo. Ogilvie² points out that all the facts tend to show that, in the case of congenital tuberculosis, the ovum becomes infected through the placental circulation from the mother ; and that no infection has ever been shown to have been conveyed by the sperm of the father. In the few cases recorded (about 20 in all) of intra-uterine tuberculosis, the mothers have all been tubercular, and no cases have been found before the *third* month of foetation, *i.e.*, before placental circulation is fully established.

Speaking generally of heredity, the reviewer thinks that, although direct transmission is looked upon now as a pathological peculiarity too rare to be taken into consideration, the balance of present opinion would be against the contention put forward by Dr. Latham, as stated above, and in favour of a certain inherited tendency or suitability of soil being transmitted by the tuberculous to their offspring, but that this tendency can be greatly, if not wholly, eradicated by healthy rearing and surroundings.

Bearing on the subject of causation comes an interesting communication from Robin and Binet.³ They show that in phthisis, in those predisposed to phthisis, in individuals after excess of alcohol, or overmuch mental or physical wear and tear, the chemical interchanges taking place during respiration are profoundly altered. Under these circumstances the actual amount of air used is greater, the oxygen taken up and the carbonic acid thrown out both being increased. This interchange is influenced by various conditions :

- (1.) Hot, moist air (breathed) increases it.
- (2.) Cold air, when *breathed*, diminishes it, but the reverse happens when the *cutaneous* surface is exposed to cold.
- (3.) Exercise increases, while rest diminishes it.
- (4.) High altitudes usually diminish it.

(5,) Certain drugs, such as cod-liver oil, cacodylate, or arseniate of soda, diminish it.

(6,) It is diminished in gout and allied conditions which are regarded as antagonistic to tubercle.

The writers think that the systematic examination of the condition of respiratory chemistry materially helps in the diagnosis, not only of early cases of phthisis, but also of those showing a predisposition to the disease; and that the study of the various circumstances influencing the chemical interchanges during respiration would do much to suggest appropriate management both as regards prophylaxis and treatment. They do not advance any theory to explain these differences in respiratory chemistry, but they evidently regard subjects showing increased respiratory interchanges as more liable to pulmonary phthisis than others.

While the cause of phthisis is universally regarded as infection by tubercle bacilli, the reviewer thinks that there is an increasing feeling that there must be many other accessory causes helping and determining the incidence of the disease. The tubercle bacillus is always with us, but the determining cause may differ in each case—in one being a strong inherited tendency, in another over-work and debility, in another some damaged condition of lung. So that the bacillus stands as the primary cause, but there is necessary some loss of resisting power to enable it to take root; and this loss of resisting power may be either inherited or acquired, and may be general or local—due to some catarrhal, inflammatory, or other morbid pulmonary condition.

PATHOLOGY.—Ever since Koch promulgated his views with regard to the unimportance of bovine in the spread of human tuberculosis, investigations have been going on with a view to substantiate or disprove them. In looking over the evidence brought by various investigators, one is drawn to the conclusion that the matter is as yet by no means definitely settled. It must be remembered that Koch's chief contention was that the regulations with regard to milk and cattle were far in excess of what was necessary, in that he believed that bovine tuberculosis was seldom transmitted to man. He still holds these views.⁴ He does not believe in the transmission of the disease by milk or meat, though he does not deny the possibility of the occurrence of isolated cases. He says the boiling of milk, as ordinarily carried out, does not kill "perlsucht," and, moreover,

he points out that in the case of butter and cream no such attempt at sterilisation is practised. Further, he claims that much "perlsucht" meat escapes detection by sanitary officers, and is consumed in large quantities in the form of sausages. He therefore argues that if "perlsucht" were transmissible to man, widespread outbreaks of human tuberculosis would result. On the other hand, many experimenters have published series of investigations claiming to show that human tubercle can be transmitted to the calf and other animals, and some of them point out that this is much easier if human mesenteric or glandular tubercle be used for the purpose; whilst others report cases in which "inoculation" tubercle has occurred, transmitted from cattle to man, and also other cases of tuberculosis in man as the result of the ingestion of tubercular meat or milk. Looking at the various experiments and recorded cases, the present reviewer thinks they tend to show that undoubtedly tubercle can be transmitted from man to cattle and *vice versa*; but that transmission is more difficult from one species to another than from one to another of the same species; moreover, that the disease of one species gives rise to a less virulent form when inoculated into another species. In other words, bovine tubercle is more virulent to cattle than to man, whilst human tubercle is more virulent to man than to cattle. It would therefore appear that bovine and human tubercle are identical diseases, but modified by the host in which each has lived.

Hansemann⁵ comes to the conclusion that tuberculosis is certainly spread by food, especially by milk; that the form it then takes is not pulmonary, but intestinal, glandular, or general. Nathan Raw⁶ says that he has never seen a case of *tabes mesenterica* in which the child had not been fed on cows' milk for some months, or at least weeks, before its occurrence. Bearing on the same subject, Still⁷ gives the percentages of the primary seat of tuberculosis occurring in children as follows:—

Lung	105	Intestine	53
Probably Lung	35	Probably Intestine	10
Ear	9		
Probably Ear	6		
	153—57%		63—23%
	Bones	5	
	Fauces	2	
	Uncertain	46	
		62—20% (nearly)	

It may be that, as Nathan Raw^s suggests, bovine tubercle begets in man the intestinal, glandular, serous, articular, bony, or general form, whilst human tubercle is responsible for the pulmonary form. Another interesting point has come out in the experiments, viz., that some animals (generally calves), although they may be very difficult to infect with human tubercle, when so inoculated show a considerable immunity to subsequent inoculation with bovine tubercle, even although the primary inoculation was only followed by a local lesion. The practical conclusion seems to be that, however difficult transmission from one species to another may be, yet that it is possible, and as long as that possibility exists, preventive measures are not only justified, but necessary.

DIAGNOSIS.—Although many aids to diagnosis have of late years been made, we still have to rely chiefly upon the physical examination of the chest. The importance of early diagnosis cannot be over-rated, for many observers show conclusively that the death-rate increases the longer the duration of the case before treatment. We have at our command for making a diagnosis : (1) Symptoms ; (2) Physical examination ; (3) Examination of sputum or other material from the chest (pleural fluid, etc.) ; (4) Examination of the throat ; (5) Tuberculin inoculation ; (6) Agglutination test ; (7) Radiography ; (8) Examination of urine ; (9) Examination of blood.

The writer thinks that the physical examination of the chest, coupled with skilled sputum examination, must still be relied on as giving the best results for early diagnosis. It is perfectly true that if the diagnosis could be made while the diseased focus was so limited as to give no physical signs, and before softening had commenced, and therefore before bacilli could appear in the sputa, the results of treatment would probably be much better than they are. But a trial of other methods of diagnosis, such as the tuberculin reaction, the agglutination test, or radiography, would not appear to give any earlier indication of the presence of commencing pulmonary disease, and one turns to symptoms as being in some cases almost surer and earlier evidences of the onset of the trouble. Such are : (1) Hæmoptysis ; (2) Progressive debility ; (3) Evening fever ; (4) Anæmia and gastric disturbances.

Success in physical examination depends on : (1) Careful comparison of the two sides of the chest ; (2) Using all the means at our disposal in making the examination, viz., inspection,

measurement, percussion, palpation, and auscultation, not relying on one or two only of these parts of what should be a complete examination. There will very often be peculiarities, fallacies, and obscuring signs, nevertheless constant practice and experience will render the observer less and less likely to overlook early signs.

Theodore Williams⁹ draws attention to some of these difficulties. Speaking of dulness and crepitation as signs, he says: Crepitations may mean a pneumonia (as in some cases of typhoid, easily mistaken, when at the apex, for early phthisis), but, he adds, if bronchophony be also present the case is almost surely tubercular. Some of the most difficult cases are those in which signs of bronchitis being present, tend to mask signs of phthisis which may also be present. In such cases Williams points out the importance of noting whether the bronchitic signs are limited to one lung, or to the back, or perhaps are found most marked at one apex posteriorly, or if the rhonchi end in a prolonged expiration; for all such signs are most suspicious, and the last almost pathognomonic of phthisis.

With regard to examination of sputum, it must be remembered that several observers have reported "acid-fast" bacilli which were apparently non-tubercular, in that they gave no cultivation on suitable media, and did not cause tuberculosis in guinea-pigs. It is, therefore, wise to inoculate guinea-pigs in doubtful cases.

Tuberculin reaction.—This does not seem to have been realised; but Bandelier¹⁰ advocates strongly the use of tuberculin for diagnostic purposes.

Examination of urine.—Solly¹¹ emphasises the importance of always examining the urine in cases of phthisis. The chief reasons he gives are the following: (1) Bright's disease is fairly common (over 15 per cent according to one authority); (2) Over-feeding may cause albuminuria; (3) Diabetes may be present; (4) Gout or lithiasis may be shown; (5) Tuberculous pyelitis may be present; (6) Diazo reaction may be present in cases with complications. Another writer—Raoul de Boissiere¹² reports a series of observations bearing on the value of the diazo reaction. He applied the test in 130 cases of phthisis. His conclusions are: (1) It only occurred in 18 out of 130 cases; (2) When present it was usually in cases with definite pyrexia; (3) It was associated with an advanced stage of the disease, and was not invariably present even in such cases. It cannot, therefore, be relied upon for early diagnosis.

TREATMENT.—Special treatment which has been recently recommended will be first considered, together with suggestions for the treatment of symptoms or complications, reserving general management, sanatorium, dispensary, and preventive treatment to be dealt with at the close.

Intra-tracheal Injection of Antiseptics has been recommended by Colin Campbell.¹³ He insists on the antiseptic being dissolved in **Glycerin**, which he claims as less irritating than oil, and because of its affinity for water, readily mixing with the bronchial secretions, the antiseptic is carried further into the lung than if oil were used as a diluent. Medicinal **Izal**, **Menthol**, **Salol**, and **Creosol** compounds are used in this way. He claims that the treatment is simple, effective, and goes to the root of the evil, and that the patient can be treated as an out-patient and be doing his work all the time.

Tuberculin Treatment has been revived by W. Canea Wilkinson.¹⁴ He speaks very highly of its use in suitable cases. He points out the necessity for excluding cases of mixed infection from such treatment, as they are often harmed by it. In early cases of unmixed infection he claims that tuberculin will give 75 per cent of "cures." The very cases that would be selected for such treatment, however, are those which respond so well to sanatorium treatment, which would give about the same percentage of "arrests" in similar cases. Moreover, the difficulty of getting cases of unmixed infection is well known. The writer has always felt with regard to this subject, that tuberculosis belongs to a class of diseases (of which rheumatism and pneumonia may be taken as other instances) in which one attack would lay the individual open to further attacks, rather than confer any immunity, and therefore feels that any treatment on the lines of the tuberculin treatment, or any other form of serum-therapy, is not applicable in its case.

Hetol (the name Landerer gave to the soda salt of cinnamylic acid) has been used in intra-venous and intra-muscular injections by Dr. Amrim.¹⁵ He cannot claim any positive results, but thinks the temperature was lowered thereby: he saw no ill-effects. Landerer originally proposed its use in order to promote increased vascularity of the tubercular deposit, in which he claimed that the slowness to heal was due to want of blood supply.

Antiseptics are still being largely used in the treatment of phthisis, either directly injected, as mentioned above, or sprayed

in, or inhaled. They are recommended by some to be rubbed into the surface of the body (more applicable in children), whilst MacGuire has practised the **Intravenous Injection of Formaldehyde**. Speaking generally, the danger is that the digestive tract may be upset when they are given by the mouth, and it would seem that larger doses can be borne and more directly applied when given by the bronchial mucous membrane. Although it cannot be supposed that they can kill the organism in the actual lesion, they may possibly weaken its growth; and, what is more important still, they probably render inert those organisms which are being discharged. There can be no doubt of the constant auto-reinfection of phthisical patients by their own sputum; anything which will limit its infectivity must be a distinct gain.

Hæmoptysis.—H. M. Tickell¹⁶ remarks that morphia has drawbacks, to its use; gelatin solution hypodermically is painful, and a slough sometimes is formed, whilst tetanus has occurred. He recommends **Gelatin per Rectum**, and says it acts quite as well as when injected subcutaneously. He gives about 9 oz. three times daily, at body temperature, of a solution of gelatin of the strength of about 21 grains to the ounce. Niedner,¹⁷ however, considers that the beneficial effects of subcutaneous injections of gelatin in cases of hæmoptysis is entirely due to the stopping of the movement of the affected side of the chest by the tense swelling caused by the fluid, as he obtained equally good results by the use of **Indiarubber Plaster** to the chest wall. **Supra-renal Extract** has also been used with excellent results for checking hæmorrhage.

Diet.—It has been acknowledged that a leucocytosis is often antagonistic to disease. Galbraith¹⁸ shows that the highest digestive leucocytosis occurs with a meat diet; he claims that this leucocytosis is most helpful in arresting the disease, and recommends a diet rich in meat.

Bardswell and Chapman¹⁹ claim to show that the enormous feeding practised at many sanatoria is useless, and even harmful; they hold that a slight increase beyond what is absolutely necessary is all that is needed. They state that over-feeding throws more work on the heart, lungs, and kidneys, puts on flesh too rapidly, and causes dilatation of stomach and atonic dyspepsia, so preventing the best results being obtained.

Surgical treatment.—The methods which have been recommended are :—

- (1.) **Excision:** In the vast majority of cases inadmissible.
- (2.) **Drainage of Cavities** has given very bad results, and by many is considered an unjustifiable operation.
- (3.) **Compression by Injection of Nitrogen Gas** is a rational treatment. Its use is to cause mechanical compression, thereby promoting collapse and contraction of cavities, with diminution of circulation of blood and lymph. It is suitable²⁰ for the arrest of acute hæmorrhage in cases showing marked symptoms and few physical signs, and also in the case of small and not very old cavities, to aid contraction.
- (4.) **Thoraco-plasty**, based on the same principles as nitrogen injection, is an extensive operation, attended with considerable risk. Landerer²¹ recommends it in old, chronic cavities, which he states cannot heal until the chest wall is allowed to fall in and so permit of their contraction.

SANATORIUM, GENERAL, AND PREVENTIVE TREATMENT.

Many as the various special or specific treatments are which have been from time to time advocated for this disease, it is still true that none of them give any better, if as good, results as what has been styled the "open-air treatment," or some form of general management running on the same lines. Nature cures tuberculosis by forming fibrous tissue, which in its contraction gradually encapsules and isolates the disease. This process takes time, and the object of all treatment must be to gain time for this process to take place. The essential points in the management of a phthisic are:—

- (1.) **Rest:** and this rest must be of the mind as well as of the body.
- (2.) **Exercise.** As the general health returns the rest must *not* be too absolute, and undoubtedly great benefit is obtained by gradually *increasing* exercise. Otherwise, although the disease may become arrested, the lung-power and use have been so much curtailed that permanent dyspnœa, on the slightest exertion, will remain; and, moreover, patients under such circumstances are apt to put on an undue amount of fat. We have all seen the results in unwieldy, fat phthisics, in whom the disease may possibly be arrested, but who are permanently dyspnœic, and whose life is a burden to them. Great care is needed to hit the happy medium, and to prescribe the right amount of exercise to each individual. Each case must be studied by itself, and ill-effects of excessive exercise in some, and of deficient exercise

in others, are facts which speak strongly for the necessity of having cases constantly under skilled supervision.

(3.) **Open Air.** So much benefit arises in the great majority of cases from constant exposure to open air that it is hardly necessary to emphasise the point. That the temperature is lowered, the cough lessened, and the night-sweats diminished has been abundantly proved. That the air may be cold is no contra-indication; but it must be distinctly understood that, although the cold may be admitted to the lungs with benefit, any *chilling of the cutaneous surface* by it does harm. It must also be pointed out that cases in which there is bronchitis (phthisis is often the sequel to chronic bronchitis) do not stand the "open air" treatment in cold climates so well as others. Again, although open air is essential, *wind and draughts* are detrimental.

(4.) **Judicious Over-feeding.**—Bardswell and Chapman's plea²² against the enormous over-feeding carried on in some sanatoria has already been noticed, and there can be no doubt that in some cases harm is done. At the same time it must be remembered that over-feeding *is* necessary; that although dyspepsia and intolerance may be caused by excess, yet, on the other hand, we often see dyspepsia disappear as the result of increased nourishment being taken. Indeed, it is noticeable that in many cases, although dyspepsia may be present at first, assimilation goes on uninterrupted by it, and as the vital powers are raised by the increased amount of food absorbed, tolerance replaces intolerance,

(5.) **Prevention of Re-infection.** The present writer thinks sufficient importance has not been given to this point in the treatment. Nothing is more noticeable, in comparing the progress of cases, than the way in which individuals do badly where, from any cause, their highly infectious emanations (sputum, etc.) are not properly destroyed. Where the bed-clothes are soiled, the room dirty, where dust is allowed to collect, where handkerchiefs and spittoons are never properly looked after, there is not only danger to those attending the patient, but likewise a probability of the patient constantly re-infecting himself; and a great part of the success of sanatorium treatment is undoubtedly due to the efficient and systematic destruction of this infectious material. To the same end careful attention should be paid to the condition of teeth, mouth, and throat. **Antiseptic Gargles** before taking food will undoubtedly help,

and the good resulting from the internal administration, inhalation, and tracheal injection of **Antiseptics** is probably obtained in this way.

Results.—Sanatorium treatment is based on these principles: the details are now so well understood that no further mention is necessary. We have certain percentages of “cures” or “arrests” reported as the result of such treatment, varying from 50 to 75 per cent of all cases. Naturally these results very much depend on the care which is taken to select cases likely to do well, to the exclusion of less hopeful ones. Rushton Parker²³ divides cases into three groups, and says: (1) “*Advanced*” cases gain but little permanent benefit even after six months’ residence; (2) “*Intermediate*” cases are benefited for many years by four and a half months’ residence; (3) “*Early*” cases are enabled to earn their living for many years by three months’ residence. Reiche²⁴ has collected results from the German sanatoria for working classes. These may be stated in two tables. Out of 1773 cases treated there were:—

1364, Discharged capable of doing full work and continuously earning full living.

342, Capable of doing partial work.

66, Incapable of working.

1, Died.

Following them after their discharge, he found:—

Of those discharged in 1895—42·7 % were working in 1902.

“	“	“	1896—65 0 %	“	“	“
“	“	“	1897—67 7 %	“	“	“
“	“	“	1898—58·1 %	“	“	“
“	“	“	1899—61·7 %	“	“	“
“	“	“	1900—62·4 %	“	“	“

Therefore for the whole six years 62·1 per cent were capable of continuously earning a full wage. Of those discharged 162 (13·1 per cent) died, some of them of other diseases than phthisis.

These recoveries stand rather high, but it must be noted that many of them were admitted in the pre-bacillary stage, never showed any bacilli, and may, possibly, not have been phthisics. Reiche notes that in the vast majority *the physical signs did not disappear*. It has been pointed out that sanatoria only take early cases, and that many of these are discharged but little improved. Rushton Parker (*op. cit.*) points out the necessity for having homes for the hopelessly bad cases, because of their extreme

infectivity, and remembering that the majority are paupers, recommends that such institutions should be put on the rates.

PREVENTION.—*The preventive treatment* of phthisis is far too wide a subject to be adequately dealt with here. Some of the most important points may be epitomised. Byrom Bramwell²⁵ divides prevention into:—

(1,) *The special prevention*, necessary in predisposed individuals, by: (a) Special care and training of those with strong heredity; (b) Careful treatment of predisposing lung conditions (acquired predisposition).

(2,) *General prevention* by: (a) Destruction of all expectoration; (b) General sanitation—ventilation, size of rooms, overcrowding, etc.; (c) Special sanitation—public instruction, inspection of specially liable trades; (d) Early diagnosis—means of testing sputum (and milk) free of charge; (e) Hospital accommodation for dangerously infective cases—with power to remove; (f) Systematic disinfection of houses; (g) Notification of each case.

Johnson and Coates²⁶ have pointed out the extreme likelihood of house infection, and the prevalence of phthisis in old, dark, dusty, sunless, and ill-ventilated houses.

The importance of prevention amongst children has been pointed out. They are specially liable to become infected after acute diseases. The danger in our public and elementary schools of disseminating the disease has been emphasised by Dr. Davies,²⁷ whilst the infectious nature of the dirt under children's nails has been demonstrated by Schülz.²⁸ James Niven,²⁹ in a most interesting paper, discussed "The relation of phthisis to factory and workshop conditions." A perusal of the paper shows the high mortality from phthisis in many trades, and the constant association of heightened mortality with occupations in which abuse of alcohol is common. Niven ascribes much importance to the indiscriminate spitting in workshops, but specially in public houses, as a cause. He advocates as preventive measures: (1) Compulsory notification; (2) Prohibition of spitting in workshops, etc.; (3) Systematic cleansing of workrooms—wet sweeping; (4) Increased ventilation and lighting.

Special dispensaries have been recommended for the treatment of phthisis, and it is evident that such institutions would not only prolong and extend some of the benefits already obtained by those who had been in a sanatorium, but would do a vast amount of good by educating those who have not had the

schooling, given by sanatorium life, in the most important matter of prevention.—[W. J. H.]

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PLAGUE.

James Cantlie, M.B., F.R.C.S.

The interesting and comprehensive report on the causes and continuance of plague in Hong-kong by Dr. W. T. R. Simpson,¹ and the experiments he conducted concerning the presence of plague in animals, is a distinct addition to our knowledge, not only of plague, but also as regards infection of animals generally. The chief points brought out by Simpson are:—

(1.) That plague is met with in domestic animals, in a plague-infected district, to a wide extent, but that the signs and symptoms of the disease in animals are obscure.

(2.) Horses, cattle, pigs, fowls, dogs, cats, etc., were all infected by being supplied with plague cultures, or by the organs of animals that died of the disease.

(3.) In pigs, fowls, etc., the animals showed no signs or symptoms of plague, even whilst their temperatures were high and they were therefore suffering from an advanced stage of the disease. A pig would go about and eat voraciously with a temperature of 104°, and a fowl with a temperature of 106° or 107°. For three or four weeks these animals would survive, and only show signs of illness some twenty-four hours before death.

(4.) The excreta of these infected animals were found to contain plague bacilli; and wherever they went the soil became infected by plague bacilli.

These observations are far-reaching in importance, and point to the hopelessness of the speedy extinction of plague from any neighbourhood in which the disease has obtained a hold. Hitherto the rat is the only animal that has been considered capable of spreading or maintaining plague in a district or town; but since Simpson has proved that almost all animals, whether

beasts or birds. harbour plague germs, a much wider view of the matter must be taken. It is but little use killing the rats on board ship with the hope of exterminating or preventing the disease, if the live fowls, turkeys, geese, pigs, sheep, etc., brought on board for human consumption are infected by plague, for their excreta can contaminate the ship and the food. Fowls, ducks, etc., have been found exposed for sale in the public market in Hong-kong suffering from plague, and the fleas, etc., from these animals are as likely to carry infection as are those of the rat. A further point in the presence of plague in a community has also been brought to light, viz., that apparently healthy persons in a plague-infected centre may have plague bacilli in their blood, and these persons, although in themselves they exhibit no signs of illness, may by their excreta infect others, and in this manner help to continue the disease.

It would appear, therefore, that the eradication of plague is a much more serious matter than was contemplated a year or two ago. The bacilli of the disease exist in a large number of men and animals without causing illness, and means of spreading and continuing the disease would seem interminable. Plague has now existed since 1894 in Hong-kong, and since 1896 in Bombay; and we know now that the "great plague" in London did not end with the burning of a large part of the city, as was at one time believed, but cases of plague continued for over fifty years later.

Many sanitary methods have been tried, but although most have been much to recommend them, they have been founded on ignorance of the extent to which plague keeps its hold on the community. In India the mortality from plague during the first six months of 1903 amounted to 533,565.² In April, 1903, over 30,000 deaths from plague were recorded weekly in India. In Mauritius the disease continues to reappear with persistency. In Cape Colony, although plague has never caused a serious mortality, cases continue to occur in certain of the large centres of population. During the year a number of cases of plague were brought to Marseilles, but fortunately the disease did not gain a hold in the city. In several cities of the Argentine and Brazil plague was reported to have reappeared after a considerable interval of immunity. In the Philippines also plague retains its hold, and an alarming outbreak occurred in North China in the summer of 1903.

Rat fleas are by some (Simond) considered capable of biting

man; while others (Galli-Valerio) maintain that they do not bite man. Tidswell³ examined the fleas harboured by rats, and found that of 100 fleas obtained, 10 were identified as *Pulex fasciatus*, 8 as *Typhlopsylla musculi*, 1 as *Pulex serraticeps*, and 81 as *Pulex pallidus*. Tidswell found that of the four species met with, all except the *typhlopsylla* bite man. Whether the rat fleas are capable of infecting man has, however, not yet been settled.

TREATMENT.—The most important statement brought to light during the year 1903 is that made by the Hong-kong observers (Atkinson, Bell, Thomson) as to the effects of large doses of **Carbolic Acid** when exhibited in plague. Thomson⁴ gave 144 grains of carbolic acid daily in plague. He divided the quantity into two-hourly doses of 12 grains each, and exhibited the drug in a mixture flavoured with syrup of orange and chloroform water. In one case he continued this treatment until as much as 2,500 grains of pure carbolic acid were given, before the bacilli ultimately disappeared from the patient's blood. Symptoms of poisoning from the drug were practically unknown, under even the continuance of these heroic doses. It has been maintained by some that carboloria is caused only by the impurities apt to be contained in carbolic acid, and this belief would seem to be in some measure justified by these results. Thomson considers as the result of his observations that the administration of large doses of carbolic acid is the most hopeful means of treating plague.

Cairns,⁵ from experience gained in Glasgow, concludes: (1) That Yersin's serum is a remedy of the greatest value in plague; (2) That its action is bactericidal as well as antitoxic; (3) That the serum should be given early, and administered both subcutaneously and intravenously in quantities from 150 to 300 cubic centimetres; and the more serious the illness, the larger the proportion of this quantity should be given intravenously. Hornabrook,⁶ from observations on the effect of inoculation with Haffkine's preparation in a city of 38,000 persons in India, reports as follows: 10,000 of the population left the city. Of the 28,000 persons remaining 11,457 were inoculated twice, and amongst them there occurred 41 attacks and 21 deaths; 6,147 were inoculated once, and of these 141 contracted plague and 55 died of the disease; of the remaining 6,543 who were not inoculated, there were 1,189 attacks and 927 deaths from the disease.

REFERENCES.—¹*Brit. Med. Jour.*, Sept. 26, 1903; ²*Jour. Trop. Med.*, Sept. 1, 1903; ³*Brit. Med. Jour.*, June 27, 1903; ⁴*Jour. Trop. Med.*, Oct. 1, 1903; ⁵*Brit. Med. Jour.*, May 9, 1903; ⁶*Therap. Gaz.*, June 15, 1903.

PLEURISY.*Wilfred J. Hadley, M.D., F.R.C.P., F.R.C.S.*

Gilbert Gordon,¹ while speaking of the physical signs of pleuritic effusion, draws attention to the convexity of the dull curve in the postero-lateral regions of the chest, and the concavity of the dull curve anteriorly; and points out the importance of noting whether the "cardio-hepatic" space (sternum, fourth to sixth rib) be dull or resonant, as this small area becomes dull with even a small left-sided pleural effusion, but is resonant in left-sided basic pneumonia. He also mentions instances of bronchial breath-sounds and bronchophony heard over pleuritic effusions, and explains the phenomena by the supposition that the compressed lung causes the increased breath and voice sounds, which are conducted through patent bronchial tubes to the surface of the chest. It must be remembered in this connection that the maintenance of breath sounds over pleural effusion is the rule in children, and that in infants, conduction of sounds is very easy from one side of the chest to the other. The difficulties of the diagnosis between pleural effusion and pneumonia are great, and several writers have emphasised these difficulties. Gordon gives these distinguishing points:

EFFUSION.

1. The initial chill and disturbance is small.
2. Ratio of pulse rate to respiration but little altered.
3. Organs displaced.
4. Curve of dullness is convex.
5. "Cardio-hepatic" space is dull.
6. Rub or crepitation increased on extending the arm of affected side or lying on sound side, not diminished by coughing.
7. Vibration of ribs, when struck, is increased (Kellock's sign).

PNEUMONIA.

1. They are severe.
2. Ratio of pulse to respiration altered.
3. No displacement of organs.
4. Line of dullness straight.
5. Cardio-hepatic space resonant.
6. Crepitation not affected by movement but lessened by coughing.
7. Kellock's sign absent.

Koramji² points out that the dullness of fluid reaches two inches lower than that of consolidation, and that it follows a different curve.

Kelly³ mentions a sign which is important, as one of the earliest to appear when effusion is taking place. He says that patients turn so as to lie on their backs, or ask to be propped up, almost immediately effusion begins, and that it is not till

much later that they assume the well-recognised position of lying on the affected side.

It is becoming more obvious every year, as our methods of investigation improve, that the vast majority of cases of pleurisy are of *tubercular* origin. Alfred Wolff⁴ gave the percentage as high as 90 to 98. Hunter,⁵ reviewing the subject, comes to the following conclusions:—

(1.) Examination of the pleuritic fluid bacteriologically is *not* conclusive.

(2.) Inoculation into guinea pigs gives most positive results. In 55 cases, 85 per cent of the guinea pigs became tubercular.

(3.) The test by tuberculin is also very reliable. In 15 cases, 87 per cent gave reactions to the test.

(4.) The clinical evidence of the tubercular nature of most pleurisies is also strong. He gives several series of cases:—

Of 57 cases of Pleurisy 21 died of Tuberculosis within 10 years.

Of 130 cases of Pleurisy 40 became Tuberculous within 7 years.

Of 92 cases of Pleurisy $\left\{ \begin{array}{l} 23 \text{ died of Tuberculosis within 2 years.} \\ 43 \text{ showed signs of Tubercle after 2 years.} \\ 21 \text{ remained healthy for 2 years.} \end{array} \right.$

Of 310 cases of Pleurisy 178 (57%) became tuberculous, (time not stated).

Of 16 acute and fatal cases of pleurisy—miliary tubercle of the pleura was found in every instance at the autopsy.

In the same article he also draws attention to the fine type of patient who develops pleuritic tubercle, as compared with the often poor type of those developing the pulmonary form. This explains, to a certain extent, the fact which he emphasises, (in agreement with Osler) that two-thirds of tubercular pleurisies are curable—*much more so* than tubercular pulmonary affections.

The tubercular nature of so many cases of pleurisy renders it more than ever necessary to accurately ascertain the nature of any given case, so that the treatment may be appropriate. Although the tests given by Hunter are reliable, they are by no means so easy to apply (inoculation of guinea pigs, and tuberculin test). It would be much easier if a reliable test could be obtained from the fluid. Jousset⁶ describes a method which sounds hopeful. He allows some of the fluid to coagulate, digests the coagulum with gastric juice, which quickly dissolves the clot, but has no effect on tubercle bacilli, if present. He then centrifugalizes and examines the deposit for tubercle bacilli. In 20 cases of primary sero-fibrinous pleurisy he found tubercle bacilli in every case by this method.

Delafield⁷ reports 4 cases of primary new growths of the pleura. He shows that these are endothelial growths originating in the lymphatics of the pleura. The history is usually that of an unusually severe attack of pleurisy with effusion, recurring, and followed by bloody fluid in the pleura, emaciation, and death.

F. P. Henry⁸ gives an interesting account of a case of pulsating pleurisy, and quotes others. He comes to the following conclusions as to the causation of the condition.

(1,) The effusion (fluid or pus) is left-sided and large.

(2,) That there is relaxation of the chest wall from paresis of the intercostals.

(3,) That there is a forcible heart-beat.

He quotes Lepine, who gave the following conditions as being necessary for the development of this phenomenon. (a) Complete compression of lung; (b) Rigidity of the mediastinal tissues; (c) A certain amount of tension in the diaphragm. He emphasises the importance of recognising two varieties (1) Where the pulsation is entirely intra-pleural; (2) Where it is partly or wholly extra-pleural, as in a "pointing" empyema.

TREATMENT.—There is but little to add to the treatment now so well recognised. The same differences of opinion are noticed with regard to **Tapping**, and when to do it. The balance of opinion would seem to be that a pleural effusion should be given a fair chance of re-absorbing, with due care not to allow the fluid to remain so long as to promote permanent damage to the lung from prolonged collapse. For a collapsed lung will not remain collapsed *only*, for an indefinite time; inflammatory changes, followed by fibrosis, will inevitably take place under such conditions. On the other hand, it must be remembered that if the effusion be due to tubercles, as it frequently is, the uniform pressure of the fluid will do more to check their growth and extension, by limiting the circulation, than anything else, and should not, therefore, be too readily removed. Delafield⁹ however, does not take this view, and advocates early tapping in all cases, and no other treatment. He says that if this be done, cases ought not to be ill over two weeks; and that the practice of leaving "tapping" until dyspnoea or some other untoward symptom supervenes, prolongs the illness, causes more adhesions and greater damage to the lung, and pulmonary tuberculosis more frequently results.

Vaquez and Quiserne¹⁰ have used injections of filtered **Sterilized Air** in the treatment of cases of tubercular pleurisy.

The *modus operandi* was as follows: (1) Remove the fluid; (2) Inject a smaller quantity of air (proportion of $\frac{1}{2}$ of air to $\frac{3}{4}$ of fluid removed). No danger attends this treatment. The pneumo-thorax produced disappears in about fifteen days, with a resulting cure. Others use oxygen in the same way, but find that it is too rapidly absorbed. This treatment recalls Lemke's treatment of phthisis by compression, using intra-pleural injections of nitrogen gas.

Tchigayeff¹¹ has used a treatment (suggested by Gilbert in '94) of injecting some of the **Pleuritic Fluid** subcutaneously into the patient. He reports excellent results in 8 cases. He explains the benefit obtained by the supposition that the fluid contained a small amount of tuberculin. He says: (1) The injections are quite harmless if the fluid be *non-purulent* and contain no tubercle bacilli; (2) 1 to 4 c.c. should be injected into the subcutaneous tissue over the interscapular or axillary regions, and may be repeated; (3) The temperature fell after the first or second injection; (4) The exudation diminished and disappeared in about fourteen days.

REFERENCES.—¹*Canadian Jour. of Med. and Surg.*; ²*Med. Press*, July, 1902; ³*Louisville Monthly Jour. of Med. and Surg.*; ⁴*Med. Woch.*; ⁵*Canad. Jour. of Med. and Surg.*; ⁶*Brit. Med. Jour.*; ⁷*Méd. Rec.*; ⁸*New York Med. Jour.*; ⁹*Op. cit.*; ¹⁰*Gaz. Med. Belge*; ¹¹*Roussky Med. Viestnik*.

PNEUMONIA. *Wilfred J. Hadley, M.D., F.R.C.P., F.R.C.S.*

Bacteriology.—In the Croonian lectures by the late Dr. Washbourn,¹ we have most valuable contributions to the bacteriology of pneumonia. He shows that the serum of immunised animals has agglutinating powers on cultures of pneumococci. This power is strongest about the crises of the disease; it may last for four or five weeks, but may disappear in one week; it is most effective on cocci obtained from the mouth of the same animal. He points out that Menes has shown that the presence of white corpuscles is necessary for agglutination to take place, from which fact he argues that the action of the immune serum on the cocci enables the leucocytes to attack them. He points out (as also does Huber²) that pneumococci grow in a particular way in immune serum; instead of forming general turbidity, they form a growth which falls to the bottom as a sediment or ball.

He shows that there are many different strains of pneumococci, having great differences in virulence, and producing different

inflammatory conditions. He found the organisms in the blood of inoculated animals after a few hours, but that they were not numerous while the temperature was high, appearing in enormous numbers as the temperature dropped towards death; whilst in some, even fatal cases, they were not found. Prochaska³ found the organisms in the blood of 38 out of 40 cases, whilst in the remaining 2 cases streptococci were found.

Washbourn also states that pneumonia and pleurisy frequently result from subcutaneous or intravenous inoculation, showing that introduction through the pulmonary area is not always necessary. It has long been known that pneumococci may be found in the mouths of the majority of healthy people; more recently many observers have discovered them in the lungs of healthy animals. It would seem, therefore:—

(1.) That immunity might be conferred, but as there are many strains of pneumococci it could not be conferred against them all, and moreover, it would be quite ineffective against pneumonia arising from any other organism (*e.g.*, streptococci or typhoid bacilli). Further it might be added that the duration of this conferred immunity would be very short, probably only a few weeks.

(2.) The presence of the organisms in the blood of pneumonia patients shows the way in which complications may arise (meningitis, etc.).

(3.) That unless pneumococci are found in practically a pure culture in the sputum, they are of no diagnostic value. For this purpose inoculation is by far the best test, the pneumococci occurring in healthy sputum, having no virulence, cause no misleading results.

(4.) That the organism may pass in to the body by various paths, not necessarily the lungs, and may give rise to various pathological conditions, not necessarily pneumonia.

DIAGNOSIS.—S. Vere Pearson,⁴ in an interesting article, discusses the differential diagnosis between croupous and catarrhal pneumonia in infants. Many of his points are very helpful, and they are here given arranged, as far as possible, in tabular form, so that these differences can be more readily seen. He considers the two diseases absolutely distinct from one another, but admits that, though they are usually easily distinguishable, it is sometimes most difficult, if not impossible, to differentiate between them.

CROUPOUS PNEUMONIA

Onset.—Sudden.

Temp.—High and continuous.

Respirations.—Hurried, without dyspnoea, no retraction of chest walls.

Physical signs, (a) of Consolidation.—Early and marked at apex or base, localised.

(b) of Bronchitis.—Slight or absent, only over the solid area, and chiefly during resolution.

Cyanosis.—Uncommon.

Cough.—Slight and suppressed.

Ends by.—Crisis.

Duration.—One week.

Prostration.—Not marked.

Complications.—Commoner (Empyema, &c.).

Etiology.—Primary from pneumococcus.

Type of Patient.—Often very healthy.

Recovery.—Quick, though signs remain.

Resolution.—Usually complete.

Mortality.—The younger the better 10-20 %.

CATARRHAL PNEUMONIA.

Gradual, preceded by bronchitis.

Moderate and remittent.

Hurried, with inspiratory dyspnoea, retraction present.

(a) Not marked, often late in appearing, at middle or base and general.

(b) Most marked, coming before consolidation, general and of both sides.

Marked.

Constant and prolonged.

Lysis.

Three weeks or more.

Very marked.

Not so common.

Secondary to bronchitis, which may be caused by pneumococcus, influenza, measles, catarrh, &c.

Previously ill nourished, rachitic, &c.

Slow, but equal to the diminution in physical signs.

Often incomplete.

The younger the worse, 60-70 %.

Difficult as it may be to diagnose between catarrhal and croupous pneumonia, it is often even more so to distinguish between capillary bronchitis and broncho-pneumonia. The initial bronchitis tends to mask the signs of pneumonia, which are, at best, often ill marked, so that we are generally more dependent upon the consideration of the temperature and general constitutional disturbance than upon the physical signs for forming a diagnosis. On this matter, Charles Quimby⁵ remarks that the transition from bronchitis to broncho-pneumonia is almost surely indicated by a marked rise in temperature, and believes that the slightest *persistent* increase of respiration following a uniform respiration rate should always lead one strongly to suspect a beginning pneumonia. Speaking of early physical signs in infantile pneumonia, Weill,⁶ of Lyons,

gives a lack of expansion of the subclavicular region of the affected side, as one of the earliest and most constant signs of infantile pneumonia.

TREATMENT.—Dr. R. W. Wilcox⁷ summarizes treatment as follows :—

- (1.) Continuous generous administration of **Creosote Carbonate**.
- (2.) Careful adjustment of mechanical conditions.
- (3.) Thorough evacuation of toxins by all possible ways.
- (4.) Temporary supplemental **Oxygen** by inhalation.
- (5.) **Liquid Diet** until physical signs disappear. He discourages the use of antipyretics, opiates, ill-advised external applications, and slowly acting heart remedies such as digitalis.

With regard to **Creosote Carbonate**, Van Zandt⁸ highly recommends it as a routine treatment. He cites a series of cases, and gives as his conclusions: "A large percentage of pneumonic cases are cut short or aborted, almost all the rest are mitigated, and the remainder, a very small per cent, are not at all affected by the remedy."

He gives the death-rate under this treatment as 5 per cent, contrasting it favourably with the ordinary death-rate, which he puts at 25 per cent. But the death-rate now-a-days is nothing like 25 per cent; indeed, under modern enlightened treatment, even without creosote, it does not amount to much more than 1 in 26. It would seem therefore that, so far as his figures go, the use of creosote does not advance us much, and it certainly cannot be regarded as a specific.

There is considerable difference in practice with regard to the use of **Cardiac Stimulants**, such as digitalis, strychnine, caffeine, alcohol, nitro-glycerin, etc. The balance of opinion would seem to be against the routine use of any of them; especially one must mention alcohol, which is so often abused. At the same time they must, *at times*, be freely used. The present reviewer thinks that **Strychnine** is the most useful, as being a respiratory and vaso-motor, as well as a cardiac stimulant. It is quicker in its action than digitalis, but that action is not so sustained, so far as the heart is concerned, as that of digitalis; the combination of the two is often most valuable. It must not be forgotten that there are other ways of relieving the failing heart, in pneumonic cases, than by stimulants: *viz.*, (1) Lessening the venous engorgement, (2) Mitigating the toxæmia. We can do both by **Blood-letting**, and the effect on the toxæmia is increased if at the same time

Saline Solution be introduced, either per rectum, subcutaneously, or directly into the vein.

Antipyretics, such as coal-tar products, are almost unanimously condemned, and opiates are to be feared most religiously in the majority of cases. Certain complications, however, such as *delirium*, especially if it be due to exhaustion from want of sleep, necessitate the most careful use of **Opium**. Again, in the often painful and exhausting complication of hiccough, nothing will be found so effectual as a hypodermic of morphia.

Of special treatments we have, in addition to creosote carbonate already mentioned, **Pilocarpine**. Dr. Pelzl⁹ has used it among young adults (army) and finds that in almost all cases it renders the patient more comfortable, shortens the disease, promotes resolution, and accelerates convalescence, and in no case did he observe any untoward effects, such as cardiac failure and collapse. Poulet thinks its action is due to the increased secretion from the bronchi promoting the removal of pneumococci, whilst Palkovics considers the increased sweating aids the elimination of the toxins. Dr. Curtin¹⁰ also reports experience of its use, and says: "I believe that it will occupy a leading place in the treatment of pneumonia. It relieves pleuritic pain and breathing, and seems to hasten resolution." As yet we cannot say much about its use. It must be remembered that the above mentioned practitioners used it on young, more or less healthy, adults, and that its depressing cardiac effect, which is most to be feared, might be more evident in cases occurring in younger and older patients.

With regard to prophylactic treatment, Reynolds¹¹ recommends: (1) Destruction of sputa: (2) Prevention of soiling of patient's surroundings, and thorough disinfection of room afterwards; (3) Thorough ventilation.

It is now generally recognised that pneumonia is an infectious malady, and it would be well if sanitarians insisted that steps should be taken to prevent its spread. It might be well to have all cases of lobar pneumonia notified.

REFERENCES.—¹*Croonian Lectures*, 1902; ²*Centralb. innere Med.*; ³*Deut. Arch. klin. Med.*, S. 557, 1901; ⁴*Pract.*, April, 1903; ⁵*Med. Rec.*, March, 1903; ⁶*Rev. Mens. des Mal. de l'Enfance*; ⁷*Amer. Jour. Med. Sci.*, Sept., 1902; ⁸*Med. Rec.*, Oct., 1902; ⁹*Wien. Med. Woch.*, 48 & 49, 1902; ¹⁰*Lancet*, May, 1903; ¹¹*Bull. Chic. Health Dept.*, Jan., 1903.

POISONING. (See "Drug Poisoning.")

POLIO-MYELITIS. (See "Paralysis, Infantile.")**PROSTATE.** (Surgery of).*E. Hurry Fenwick, F.R.C.S.*

The literature of the prostate for the last year is very voluminous, but mainly taken up by a description of cases of successful operation for the radical cure of senile enlargement of that gland. The interest in this, and the progress which is evident all along the line, is due to the advocacy and success of Mr. Freyer, who has reported a series of cases of operation by the suprapubic method. Perineal prostatectomy has many able supporters, and the opinion of the profession is at present divided as to whether the suprapubic or the perineal route should be adopted. Probably the suprapubic will be reserved for very large prostates, and the perineal for the smaller variety. Both operations were fully detailed in last year's *Annual*; but we may briefly and profitably review the subject, using freely Sir William Thomson's article on prostatectomy.¹

Historical.—Suprapubic cystotomy for the removal of tumours of the wall, or of stone, appears to have suggested to the late Mr. McGill, of Leeds, that a like course might be successfully pursued in regard to the prostate. His first operation was done in March, 1887, and this, with three others, was reported to the Clinical Society of London in November of the same year. His example was followed by his colleagues, and two years later he reported the results at the annual meeting of the British Medical Association.* Twenty-four operations had then been done, and the number was made up as follows: McGill, 12; Atkinson, 5; Mayo Robson, 3; Jessop, 3; Pridgin Teale, 1. Of these, 4 died, and of the remaining 20, 7 no longer required the use of a catheter, and were able to expel urine normally. Therefore, one-third only of the surviving patients were restored to freedom of urination.

But in comparing these results with what we expect to-day, it is important to note particularly the nature of McGill's early operations. He says: "The growth has been removed partly by tearing with forceps and partly by a strong cutting instrument which I have devised for the purpose. This is a tedious and not very elegant proceeding; it will, if the operation prove a useful one, probably be improved. The piecemeal removal which I have practised has, however, been thus far satisfactory." Now when we look into the details of the reported cases, we find that in most instances only a partial removal was effected, and that the patient had still to run the risk of a continued

growth of the parts left behind. Thus, we have these descriptions of the parts removed: (Case 2) middle lobe, size of a bean; (3) collar enlargement, size of a walnut; (8) middle lobe, size of a filbert; (12) piece, the size of a small pea; (16) middle lobe, size of a filbert. Atkinson snipped off a middle lobe with scissors, and enucleated the lateral lobes with the finger. In the eighteenth case, McGill "enucleated a portion" of the prostate; and in the twentieth, having removed the middle lobe with the forceps, enucleated the lateral lobes.

But the possibility of enucleation had been known for many years, and two years after his first case McGill, with larger experience, laid down the principle that "the prostate should be removed as far as possible by **Enucleation** with the fingers, and not by cutting." Nevertheless, this fact, and the promising successes of McGill and his colleagues, appear to have made hardly any impression upon the surgical mind in these countries. Only here and there did their suggestions produce any effect; till two years ago Freyer's reported cases awoke the profession generally to the powers within our reach in this branch of surgery. "If to-day," says Sir William Thomson,¹ "British and Irish surgeons stand in the position that the principle of operative interference is accepted and practised on some approved line, I think I am right in claiming for Mr. P. J. Freyer, of London, that it is due to his strong advocacy and to the remarkably successful results which he has achieved."

The methods employed.—(a) **Supra-pubic Method.**—Mr. Freyer's² very lucid description is as follows: "Suprapubic cystotomy is performed, after first thoroughly washing out the bladder with antiseptic lotion, as in these cases it is almost invariably septic. The catheter which is employed for this latter purpose as well as for inflation of the bladder preliminary to performing the cystotomy, and which should be of rather stiff gum-elastic, and of the largest size which the urethra will admit, is left *in situ*. The forefinger of one hand is then introduced through the wound, and a general survey of the interior of the bladder is made. The forefinger of the other hand is next introduced into the rectum, to render the prostate prominent in the bladder and keep it steady during the manipulation of the first hand. The mucous membrane over the most prominent portion of one lateral lobe, or over the so-called "middle-lobe," if there be but one prominence, is scored through by the sharpened finger-nail, and gradually detached by it from the prominent

portion of the prostate in the bladder. This portion of the enlarged prostate is covered merely by the mucous membrane, so that when this is scraped through and detached, the true capsule of the prostate is at once reached. Keeping the finger's point in close contact with the capsule, the enucleation of the prostate out of the enveloping sheath outside the bladder is proceeded with, by insinuating the finger-tip in succession beneath, outside, and above one lateral lobe, thus separating the capsule from the sheath. The finger is then swept in a circular fashion from without inwards, above, and to the inner side of the lobe, detaching this from the urethra, which is felt covering the catheter and pushed towards the symphysis, between the lateral lobes, which will, as a rule, have separated along their superior commissure in the course of the manipulations. The other lobe is attacked and treated in the same manner. The finger is next pushed well forwards beneath the prostate, and the anterior surface of the gland is peeled off the triangular ligament. When the prostate is felt free in its sheath and separated from the urethra, with the finger in the rectum, aided by that in the bladder, it is tilted to one side beneath the urethra and pushed into the bladder through one or other of the openings in the mucous membrane, which during the manipulations will have become considerably enlarged. The prostate, which now lies free in the bladder, is withdrawn by strong forceps through the suprapubic wound. Sometimes the lobes become detached along both upper and lower commissures, and come away separately.

The ejaculatory ducts are left uninjured when the lobes come away separately; but they are torn across or pulled out of the prostate when the organ is removed as a whole—a matter of trifling importance at an age when, as a rule, the reproductive powers are lost.

There is, as a rule, very little bleeding from the operation, and this is controlled by irrigation with hot lotion through the catheter."

Mr. Hurry Fenwick has operated upon over fifty cases of enlarged prostate by all methods. He reserves the perineal urethral (Goodfellow's) route for very stout patients with smallish elastic prostates, and employs the trans-capsular route (Nicol) for medium sized prostates. The suprapubic route is reserved for all large prostates. If the prostate bulges very prominently into the bladder, it may be gathered, he suggests,

that the capsular covering of the prostate at the trigone is thin. It can then be easily scratched through and the masses enucleated, and no method is so valuable or so successful as that adopted by Mr. Freyer; but if there is no intravesical outgrowth and yet the prostate is large, it can be surmised that the prostatic capsule is too dense at the trigone to allow the adenomatous mass to project there, and the pressure of the growth is mainly directed on to the prostatic urethra. In such cases Mr. Fenwick for the last two years has adopted the following expedient with success, and he recommends it to the notice of those who find a difficulty in getting through a dense basal mucous membrane. The forefinger is inserted into the prostatic urethra up to the first joint (*Fig. 16*), the point of the index is then bent backwards and plunged sideways through the mucous membrane, which in the soft elastic prostates gives readily before the pressure. At once the finger finds itself between the tough capsule of the prostate and the contained adenomatous masses (*Fig. 17*); travelling on without much opposition, the entire lobe is enucleated (*Figs. 17, 18*), and generally stripped off the urethra. If the adhesions between the urethra and the lateral lobe are very dense, that canal is best away. The finger is therefore swept over to the other side of the prostate—still within the capsule of course—and the opposite lobe is detached in a similar fashion. The greater part of the prostatic urethra is then torn away from the membranous urethra where the wall of that section of the urethra blends with the prostatic capsule, and the entire contents of the prostatic capsule are free.

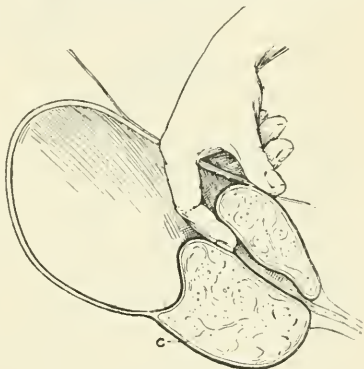


Fig. 16.—Fore-finger in Prostatic Urethra
(*Fenwick's method*).

Finally, a small incision is made medianly through the neck of the bladder, and the enucleated mass pushed up into the bladder by the pressure of the indiarubber glove-covered fingers in the rectum, and it is then removed by forceps through the suprapubic wound. Bleeding is often sharp, but checked by ergotin subcutaneously. If the entire prostatic urethra is

removed, the repair is as described in last year's *Annual*, p. 563, the vesical neck descends and adheres to the membranous opening, the constrictor urethræ of the latter forming the sphincter of the bladder. The men often pass water on the fourteenth day, and are out at the month.

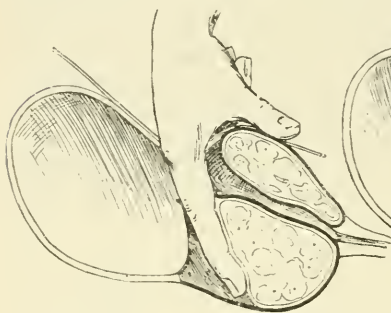


Fig. 17.

Fore-finger has crushed through the wall of the prostatic urethra, and is travelling between the tough capsule of the prostate and the contained fibro-adenomatous masses which form the lobes (*Fenwick's method*).

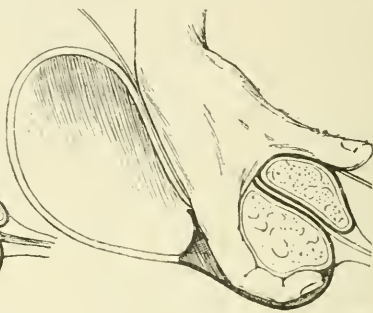


Fig. 18.

Two points have impressed themselves upon most operators :

(a) *The ease with which the large elastic tumours are shelled out.*—The bigger they are, the easier they are. In fact, they have stretched their adhesion to what most call the capsule, but Mr. Freyer, "the sheath." The small hard prostates are often most difficult to enucleate, they are apt to move during the enucleating process. Superadded to this, there is no doubt that the attachments of the mucous membrane are more intimate, and require a good deal of cautious force to free them.

(b) *The risk of hæmorrhage.*—Although hæmorrhage is

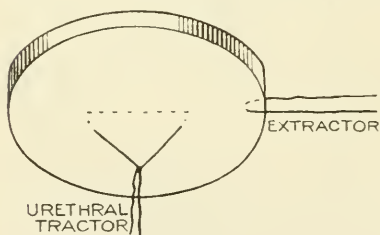


Fig. 19

usually easily controlled by flushing with hot boric solution, it may be severe, owing to opening of a vein in the prostatic plexus. Bleeding has sometimes caused death, and in one of my cases, says Sir William Thomson, "I found it necessary to introduce the

compress which I have described. The objection to the plugging of the bladder is that we have afterwards to remove

a bulky mass, and so disturb the union which has begun. There is then risk of opening channels for infection or extravasation. I have devised a method of dealing with the complication which, I think, will be found effective and simple (*Fig. 19*). A piece of smooth red rubber, $\frac{1}{4}$ in. thick, is cut in oval shape, 2 in. by $1\frac{1}{2}$ in. A long, strong, silk ligature is passed through the rubber at a point midway in its smaller diameter, and $\frac{3}{8}$ in. from the edge of the larger diameter. The needle should pass in obliquely from without. The other end of the silk is introduced in the same way $\frac{3}{8}$ in. from the opposite edge, and the two portions are tied together in a knot, close to the under surface of the rubber. The ends are then secured to a catheter, which has been introduced through the urethra, and the instrument is withdrawn. Pulling on the ligatures which have so been carried out through the urethra, the flexible rubber oval fits easily over the site of the prostate, and moderate traction will control the bleeding. This can be effected by attaching the traction silk to a piece of strong elastic, which is in turn secured to a turn of bandage round the lower part of the patient's thigh. The tendency to hæmorrhage, however, is not likely to continue long. In order to remove the rubber, a silk ligature is passed through one end, about $\frac{1}{4}$ in. from the edge. Traction upon this pulls out the little plaque edgeways, and practically no disturbance of parts results. The objection to the cotton pad suggested by Keyes is that it is complicated and cumbrous, and that adhesions occur which make the removal most painful and demand an anæsthetic. The rubber is clean, small, non-adherent, and it can be removed without difficulty."

(b) **Perineal Urethral Route.**—Goodfellow's technique (1889) is the best. A staff is passed, the membranous urethra opened as in median lithotomy, the finger insinuated into the prostatic urethra, and when in that channel it is pressed a little on to one side. The wall of the prostatic urethra gives way before the pressure, **if the case is suitable**, and the finger travels easily along between the capsule and its fibro-adenomatous contents until the entire lobe is free on its outer surface. Now comes the question, shall the prostatic urethra be left or not? If possible, the mass should be peeled off the urethra, but if there is much adhesion of the channel to the gland, it is best removed. That being so, the finger sweeps across the middle line, peeling the intracapsular contents free as it goes, until the entire glandular contents with its centre channel is free, except at

its upper (bladder mouth) and lower (membranous urethral) attachments. With a little stretching the mass is dragged to the perineal opening, and these attachments cut through with scissors. The collaborator generally makes a transverse skin incision through the perinæum to allow of the mass being delivered without stretching or tearing the rectum. In order to pull the prostate down a calculous sound may be used, its beak being used to hook the base of the bladder down.

(c) **Perineal Trans-capsular Route.**—(The Dittel-Nicol method).—A curved incision is made in front of the anus, and the prostate is exposed by dissection. After incision of the capsule upon either side in the direction of the fibres of the levator ani, the two halves of the gland are enucleated with the forefinger. The urethra is not opened.

The general feeling is expressed (perhaps a little optimistically) by MacGowan. He says, "I feel that I may state positively and absolutely, speaking only from the experience of my own operations, which have now numbered close to one hundred, that no man who is a 'prostatic,' unless his prostatism is due to cancer, need feel that he has a disease of which he may not be rid with much less risk to his life than he takes if he refuses the assistance offered to him by the surgeon. Many of these cases can be entirely cured. The tonicity of bladders which have been atonic for years, scarcely possessing enough motor power to force the urine slowly but reluctantly through a catheter, to fall without curve at the feet of the individual, have the contractile power of the detrusor so restored in a few weeks, after the removal of the obstruction, that a good-sized stream of urine will be projected in a forceful arc, a considerable distance from the body. The presence of pus, of blood, of albumen in limited quantities, of casts of any kind, excepting amyloid, are not contra-indications for the doing of either prostatectomy or prostatotomy. Nor does extreme age, long sickness, feebleness within reasonable limits, or septic symptoms, such as nausea or hiccough, prohibit surgical interference. There are just three contra-indications to which I pay attention: first, a tendency to bleed freely from very slight injuries; second, the existence of serious heart lesions accompanied by a great general muscular feebleness; third, and most important, is the inability of the kidneys to secrete a reasonable quantity of urea, and what I consider a reasonable quantity in these cases is from 15 to 25 grams *per diem*."

Mortality.—White and Patterson⁴ assert that in the literature of the last few years there have been reported 152 cases of prostatectomy by the suprapubic, perineal, and the combined methods. Of these 95 were suprapubic operations, and the remainder perineal or combined. Among these cases there were 25 deaths and 127 recoveries. Of the latter class of cases 17 are spoken of as failures, 27 as successes, and the remainder as good results, improved, or recovered. It is difficult to say, therefore, what the exact results were in the cases spoken of as recoveries, excepting in the cases spoken of as failures and in those recorded as cured or successfully operated upon. Recovery, it must be remembered, may mean that the patient has either recovered from the operation or recovered his former health.

REFERENCES.—¹*Brit. Med. Jour.* April 18, 1903; ²*Ibid.* June, 1903; ³*New York Med. Jour.* June 13, 1903; ⁴*Amer. Jour. Med. Sci.* Oct. 1902.

PRURITUS.

Norman Walker, M.D.

Bronson,¹ in a paper on this subject, emphasizes the avoidance of all irritating contacts, such as arise from coarse clothing, excessive dryness or scaliness of the skin, and sudden changes of temperature. After estimating the value of the usual time-honoured remedies, he accords the chief place to **Carbolic Acid**, and to avoid the irritating and corrosive action, mixes it with linseed oil as follows:—

R	Liquor Potass.	5j	Linseed Oil	5j
	Carbolic Acid	5ij	Oil of Verbena	℥ij

This should be applied only once daily, best at night.

Leo,² in a severe case of general pruritus, found on examination no abnormalty of any organ, but that the urine was strongly alkaline and contained excess of phosphates, and considered that as this meant increased alkalinity of the blood and tissues, acid treatment was indicated. Hydrochloric acid, first tried, reduced the turbidity of the urine, but did not alter its reaction; accordingly **Sulphuric Acid** in increasing doses was substituted until the urine became acid, when the itching was also removed. In three other cases where the urine was not acid he tried sulphuric acid, and it acted well, although not so markedly and rapidly as in the other case.

Leredde³ recommends the following as useful formulæ:—

R	Acetic Acid	gr. xx	Vaseline	5ij
	Lanolin	5j		

or, in form of paste:—

R	Acetic Acid	gr. xx	Lanolin	5iij
	Vaseline	5ij	Starch	5ij

In cases which this does not relieve, other drugs, such as **Carbolic Acid**, in 1 to 3 per cent alcoholic or oily solution ; or **Tartaric Acid** 1 in 30 parts of glycono-starch ; or tincture of benzoin in ointment ; or **Camphor**, 15 grains to 3 drachms of sweet almond oil, or :—

R Chloral	gr. xv		Camphorated Oil	ʒij
Lanolin	ʒiij			

Resorcin in 2 to 5 per cent watery or alcoholic solutions he also finds particularly valuable in persistent cases.

Hirst⁴ reports the cure of an inveterate case of pruritus vulvæ by **Resection** of the genito-crural, ilio-inguinal, inferior pudendal, and superficial perineal nerves.

REFERENCES.—¹*Med. News*, March 21, 1903 ; ²*Therap. Monats.* Dec. 1902 ; ³*Jour. des Pract.* Nov. 22, 1902 ; ⁴*Amer. Med.* May 16, 1903.

PSORIASIS.

Norman Walker, M.D.

In a series of 21 cases which Von Zumbusch¹ examined with reference to faulty excretion of nitrogenous constituents of urine, he found no abnormality, and puts this forward as a strong argument against the supposed connection between the rheumatic diathesis and psoriasis.

Dore² reports three cases following vaccination, in two of which there had been no previous skin eruption.

In a discussion of the various remedies Baltzer³ speaks of **Oil of Cade** as one of the most important, and recommends that treatment should commence with the application of equal parts of glycerole of starch and oil of cade, and after this has been used for some time the pure oil of cade should be rubbed in vigorously. Two drawbacks are noted ; one is the odour of the oil, and the other the fact that acne-like spots may be produced. A 10 per cent solution of **Chrysophanic Acid** in traumaticin, painted on daily for a week, interrupted for two days and then resumed again, gives good results. As the dermatitis set up by **Chrysophanic Acid** is said to be due to decomposition by alkaline sweat, all alkaline applications should be avoided. In conclusion he advises the following line for cases of disseminated discrete type, viz., **Chrysophanic Acid** for ten to fifteen days ; then **Tar**, either as a glycerole or pure oil of cade, or a mixture of tar and gum arabic. When apparently cured, a special hygiene of the skin is advised, such as anointing the body with oil of cade, remaining in a bath for half an hour, the bath to contain :—

R Oil of Cade	grams 50		Yolk of Egg	gram 1
Extract of Quillaia	grams 10		Distilled Water	grams 250

Wishart⁴ reports successful results in three cases where he tried pricking the early papules with points dipped in **Liq. Epispasticus** or **Carbolic Acid**, and **Blistering** larger patches. All the cases were chronic ones.

Chalmers Watson and Thompson,⁵ in a series of five cases treated with **Myelocene**, had good results in four.

REFERENCES.—¹*Zeitsch. f. Heilk.* 1902; ²*Brit. Jour. Derm.* Sept. 1902; ³*Rev. de Therap.* May 15, 1902; ⁴*Lancet*, April 11, 1903; ⁵*Ibid.*, Oct. 18, 1902.

PURPURA.

Norman Walker, M.D.

The cases recorded are varied in their character and severity, but all go to emphasise the fact that purpura is to be regarded only as a symptom, not as a disease *per se*. Schram and Rubovitz¹ report a fatal case of purpura hæmorrhagica, in which the *post-mortem* examination, and especially the occurrence of micro-organisms in the blood, are characteristic of septicæmia.

Gordon² has given details of a case in a boy of fourteen in whom the symptoms were severe abdominal pain, cardiac murmurs, nausea, vomiting, and skin eruptions, varying from simple erythema to large subcutaneous hæmorrhages. The progress of the complaint was accompanied by pains in the joints, and convalescence was interrupted by an attack of chorea, yet salicylates and other drugs had no effect, and the only satisfactory treatment was found to lie in careful nursing and feeding. Tonge³ attributes an attack in a boy of five to sea-bathing, because it occurred the day after bathing for the first time.

In a discussion at the New York Academy of Medicine on peliosis rheumatica in children, a number of types were discussed, but the general consensus of opinion, as summed up by Heiman,⁴ was that "Anti-rheumatic treatment proved as useful as any other, and this pointed rather strongly to the rheumatic nature of this affection."

Adrenalin Chloride in 10-minim doses given every two hours proved successful in the hands of Blackburn,⁵ who used it as a *dernier resort* in a severe case.

REFERENCES.—¹*Phil. Med. Jour.* Aug. 16, 1902; ²*Lancet*, Feb. 14, 1903; ³*Brit. Med. Jour.* Jan. 3, 1903; ⁴*Med. Rec.* Nov. 29, 1902; ⁵*Boston Med. and Surg. Jour.* July 11, 1903.

PYORRHŒA ALVEOLARIS. J. G. Turner, F.R.C.S., L.D.S.

Hofheinz¹ records a case of generalised pyorrhœa alveolaris in an advanced condition in a man of fifty-two, resisting local treatment, which was practically cured by five weeks' treatment at Carlsbad.

Kirk² seeks to prove that the constitutional factor in pyorrhœa alveolaris outweighs the local. After referring to the systemic manifestations in pyorrhœa, he says two facts which anyone may verify upon careful investigation prove the error of the position of those who regard the pyorrhœal condition as the cause of the systemic disturbance. (1) The cure of the pyorrhœa does not cure the constitutional malnutrition, though he admits at once, and freely, that the local pyorrhœal treatment may and often does improve the general health of the patient. (2) A careful and intelligent investigation of the case will show that the malnutrition was a chronic condition long antedating the pyorrhœal outbreak, which is therefore a symptom or indication of malnutrition and not its cause. The causal relation of pyorrhœa to ill health is important in so far as it is an active factor in the production of a so-called vicious circle, which intensifies an original constitutional vice. Investigation of a large number of cases by analysis of the saliva and the urine has convinced him that slight impairment and abnormality in the nutritional processes may exist for long periods of time, and without producing readily recognisable symptoms, but which, nevertheless, in due course so lower the vital potential of the individual as to ultimately make him vulnerable to disease invasion, and that in very many instances the disease invasion takes the form of an infection of the supporting structures of the teeth, producing so-called pyorrhœa alveolaris.

Local Treatment.—G. Mahé³ looks only to this, and regards the complete removal of tartar as a principal element of success; he quotes Younger that sometimes an hour or more is needed to cleanse one tooth. Equally important is destruction of the pockets which run up alongside the teeth, and have been formed by the destruction of the bony alveolus. For this he recommends either ablation with the knife, cautery, or caustics. Caustics, such as a drop of **Fuming Sulphuric Acid** introduced on a platinum spatula, are not very painful at the time, but have a painful burning sensation for some hours after, and need to be used again in a few days' time to effect complete destruction of the pocket. **Antiseptic Mouth-washes**, after digital massage of the gums to express pus from the pockets, are recommended every morning. Loose teeth which do not tighten up in about eight days of treatment should be extracted.

Canmartin⁴ looks especially to local treatment for the cure of pyorrhœa alveolaris, but advises always to look for sugar or

albumin in the urine. Careful scaling of all tartar is the first thing to be attended to; if only a single tooth is affected, carefully express all the pus, and then with a flexible needle tipped with absorbent wool paint the interior of the cul-de-sac surrounding the tooth with **Tincture of Iodine**; repeat as often as needed. When many teeth are affected use instead of tincture of iodine, **Mono-hydrated Sulphuric Acid** on the same flexible needle. Repeat twice weekly for a month, and resume, if needed, after a period of rest. In far advanced cases, extract.

W. V. B. Ames⁵ thinks that the destruction of the peridental membrane of many ill-conditioned teeth (pyorrhœal teeth) is due to excessive impact, and that the serumal calculus, the small thin hard plates of tartar found adhering to the roots of the teeth in pyorrhœa alveolaris, is the result of inflammation due to the wrenching of the teeth in their sockets. By fixing the loose teeth together by means of bar and bridge-work, he claims, in spite of indifferent scaling, to have rendered the patient far more comfortable; the roots become sufficiently firmly fixed in their sockets to allow of use as piers for bridges, and the formation of tartar is lessened. In the same number, M. L. Rhein advocates splinting together of loosened pyorrhœal teeth, and gives details of his methods. He regards this as a most useful measure in preserving the teeth.

N. N. Znamensky⁶ regards the disease as chiefly local, and recommends scraping the sockets with small sharp spoons.

REFERENCES.—¹*Dental Cosmos*, p. 33, Jan. 1903; ²*Ibid*, p. 521 July, 1903; ³*La Presse Méd.* p. 576, Aug. 12, 1903; ⁴*Echo Méd. du Nord*, Nov. 23, 1902; ⁵*Dental Cosmos*, May, 1903, p. 355; ⁶*Jour. Brit. Dent. Assoc.* Oct. 1902.

RECTUM. (*See also "Anus."*) Herbert W. Allingham, F.R.C.S.

The Erasmus Wilson lectures on "Adenoma and adenocarcinoma of the rectum," by Sir Charles Bull,¹ constitute the best contribution to the literature of rectal surgery for the past year. The lecturer dealt especially with the question of the relation of purely benign adenomata to the common carcinomatous growth of the rectum. He was strongly of opinion that the simple growths might penetrate the subjacent layers of the gut-wall, and become wildly malignant. Simple adenomata often arise from local irritation, as with prolapsus in children, or from the discharge of a cancerous growth, when simple growths may be found at a distance from and below the cancer. Among the congenital sacro-coccygeal tumours were some that showed

distinct evidence of having arisen from adenomatous tissue. Sir Charles Bull regards the probable duration of a case of rectal carcinoma unoperated upon, as two years. In cases of complete excision, as by the modified Kraske's operation, he prefers to suture only the front and sides of the cut ends, if any juncture of the cut bowel is attempted.

Carcinoma of rectum.—George Roberts,² of New York, recommends operation through the abdomen as the only satisfactory radical treatment of cancer of the rectum. The Trendelenburg position is adopted, and the upper abdomen shut off from the pelvis by gauze packing. The highest part of the sigmoid is used for making the artificial anus, before the excision is performed. The paper is based upon three cases.

Caird,³ on the other hand, is in accordance with most British surgeons in preferring the posterior route for excision of rectum, even when the growth is situated high up. He advocates, however, free opening of the peritoneum early in the operation.

Lewis Adler⁴ believes rectal cancer as it usually comes under the surgeon's notice, to be less amenable to operation than cancer in any other position. See also an article by Watson Cheyne,⁵ and one on anomalies of the rectum and anus, of which seven cases are described by Paolo Ferreresi⁶. Although the results of operations are not often happy in these cases, yet it must be remembered that with many of them death is speedily inevitable if no operation is performed. This is not only from occlusion of the rectal canal in some cases, but in others from infection of the urinary apparatus, where there is communication between the bowel and the bladder. Semmelink⁷ refers to the ease with which rectal cancer may be overlooked in pregnancy or in labour.

G. R. Turner,⁸ of St. George's Hospital, reports a successful case of operation for a wound of the peritoneum, caused by a broomstick penetrating the rectum. The abdomen was opened, and the rent in the anterior wall of the rectum sutured with much difficulty.

REFERENCES.—¹*Brit. Med. Jour.*, Feb. 21 & 28, and March 7, 1903. ²*Med. Rec.*, March 21, 1903; ³*Med. Press*, Jan. 28, 1903; ⁴*Amer. Med.*, Sept. 1902; ⁵*New York Med. Jour.*; ⁶*Centralb. f. Gyn.* No. 3, 1903; ⁷*Lancet*, Aug. 24, 1902.

RHEUMATISM, (Acute).

Bertram Abrahams, M.B., B.Sc., M.R.C.P.

ETIOLOGY.—Kleinschmidt¹ contributes a careful study of the influence of weather upon the etiology of acute rheumatism

based upon 251 cases extending over twenty-two years. He finds that $64\frac{1}{2}$ per cent of cases occur during the first six months of the year; the four quarters represent respectively $34\frac{1}{2}$, 33, $16\frac{3}{4}$ and $18\frac{3}{4}$ per cent. The morbidity varies directly with the amount of rain or snow which falls. The figure is raised by a cold or a variable temperature, or by a rising or variable barometric pressure; wind has no definite effect upon it. When the saturation deficit is above the monthly mean the frequency of the disease diminishes.

PATHOLOGY.—The micrococcus which was first described by Triboulet has been the subject of further investigation by various observers. F. Meyer² has continued the studies referred to in the *Medical Annual* for 1903. He cultivated the blood and inflammatory exudate of the joints from more than 30 cases of acute articular rheumatism, with absolutely negative results; from the tonsils, however, in 26 cases of acute rheumatic angina he obtained a diplococcus growing in short chains, which when injected into rabbits produced the symptoms of acute articular rheumatism, and could be obtained in pure culture from their affected joints. Out of 100 animals inoculated 21 were found to have endocarditis, and the organism was present in the vegetations. He believes that this microbe is the cause of the disease, and that the tonsils are its point of entry.

Poynton and Paine, in a communication to the Royal Medico-Chirurgical Society,³ maintain that the micrococcus can cause infective endocarditis.

Triboulet⁴ further develops the view which he had formerly laid down (*Medical Annual*, 1903), that acute articular rheumatism is, strictly speaking, a disease in which no bacteria are found, and that the presence of micro-organisms is the cause of complications.

Marmorek⁵ has essayed to work out the morphological and biological characteristics of the micrococcus, and has been followed by Ainley Walker⁶; the latter holds that the evidence proves acute rheumatism to be an infective process, and moreover that its cause is single and determinate. He has carefully investigated the micrococcus described by Triboulet, Wasserman, Poynton and Paine, and others, and comes to the conclusion that in cultures and microscopic preparations it is indistinguishable from the original streptococcus; it differs, however, in growing abundantly in the filtered culture fluid of that micro-organism. This result is also quoted in a paper by Walker

and Beaton.⁷ In a later communication⁸ Walker and Ryffel state that this streptococcus produces in a blood agar culture the colour change characteristic of the pneumococcus and the influenza bacillus, that it has a hæmolytic action upon red blood corpuscles greater than that of any other streptococcus, and that it produces considerable quantities of formic acid and another acid of the fatty series. *Formic acid* is also stated to be found in the bodies of the micro-organisms. It is obvious that if this last discovery is confirmed, it may have an important bearing upon the pathology of rheumatic fever.

These bacteriological researches are not universally accepted. McCrae,⁹ for instance, has failed to obtain any bacteriological results from the urine, blood, and arthritic exudation in 270 cases from the Johns Hopkins Hospital. Philipp¹⁰ has investigated some 30 cases in Pribram's clinic in Prague, and has found no micro-organisms in the blood or joint exudation. He also failed to inoculate guinea-pigs, rabbits, dogs, or monkeys from either of these sources; but it appeared that calves might be animals susceptible to rheumatic infection. He holds, however, that the nature of this is still unknown. G. W. Webster¹¹ concludes that many organisms may produce arthritis, and that all cases of acute articular rheumatism are probably due to infection; but that all organisms known to cause either acute articular rheumatism or other forms of arthritis also give rise to other pathological conditions. The rheumatic infection seems to be a general one, with local manifestations, and to depend largely upon individual susceptibility and other more or less accidental conditions. Dreschfeld¹² also holds that the specificity of the micrococcus is not established, and that the importance of secondary causes, such as constitutional predisposition, exposure to cold and damp, etc., must not be overlooked. Dixon Mann¹³ takes much the same view, and particularly opposes the idea that the same micro-organism can produce such different processes as septicæmia and definite acute rheumatism. The borderland cases would probably be due to mixed infection.

DIAGNOSIS.—Achalmé¹⁴ describes what he calls the pre-articular symptoms of rheumatism, and lays stress on their diagnostic importance. Of these the most significant is cardiac irregularity, of which he quotes three cases in addition to one previously recorded by Graves. All four patients had a pulse of between 50 and 60, which was irregular for from forty-eight to sixty-two hours; there was no palpitation, and the symptom

disappeared when the joints became affected. In each case the attack was mild, a cardiac murmur being present in only one of them. He considers the cause of the symptom to have been early myocarditis due to bacterial invasion. Experiments on rabbits into which a bacillus from the blood of cases of articular rheumatism was injected, resulted in their death from acute rheumatic infection, the bacillus being found in the myocardium only.

Terc¹⁵ states that in typical articular rheumatism the sting of a bee produces a vesicle, but no inflammatory zone, whereby the disease may be distinguished from gonorrhœal rheumatism. He believes that the **Bee-sting** exercises a specific effect upon the rheumatic virus, and that persons who have become immune to stings are rendered refractory to rheumatic poison. He has applied this theory to the treatment of rheumatic joints by the application of bees, with, he states, good results.

C. J. Macalister¹⁶ states that certain protracted cases of so-called rheumatic fever, which do not react to salicylate treatment, go on into typical rheumatoid arthritis. He quotes also six cases in which the symptoms presented a close similarity to acute rheumatism, but which resisted the action of salicylates and showed no tendency to cardiac complications. The temperature was remittent, rising in the afternoons and evenings; the joint pains tended to be symmetrical, and to spread to other joints without leaving those originally affected. The temporo-maxillary and cervical joints were often attacked, and the small joints of the hands and feet and the sterno-clavicular articulations not infrequently; he believes this form to be of septic origin due to toxic absorption.

Murrell¹⁷ discusses diseases which are commonly mistaken for rheumatism, including gonorrhœal, pneumococcic, influenzal, and traumatic arthritis, as well as certain other rarer forms. W. G. Stern¹⁸ treats the same subject from the surgical point of view, and gives a very good bibliography. He devotes particular attention to acute tuberculous arthritis, and holds that a safe rule is that arthritis of one joint in a child lasting more than ten days, and not influenced by salicylates, is either acute tuberculosis or osteomyelitis. Rokitansky¹⁹ also discusses the symptoms and diagnosis of acute rheumatism.

TREATMENT.—Menzer has published four papers²⁰ on the treatment of acute and chronic rheumatism by means of an **Anti-streptococcic Serum** which he has devised; this was obtained

from large animals which had been immunised by increasing doses of cultures of streptococci taken from rheumatic throats. *In vitro* the serum is bacteriolytic ; when injected in rheumatism there is a local reaction in the affected regions. The temperature at first rises, but the cure is accelerated. In cases of chronic rheumatism the joint symptoms are at first lighted up, the disease becomes more acute, and ends in rapid recovery. He believes that the serum improves the natural resistance of the body, and holds (see *Medical Annual* for 1903) that rheumatism is a non-specific disease. He maintains that this treatment prevents relapses and endocarditis, but holds that it is contra-indicated if the temperature is very high, or if pericarditis or pleurisy is present. Large doses of the serum are recommended. At first 100 to 150 c.c. were given at the rate of 10 to 20 c.c. a day ; now Menzer uses 30 to 75 c.c. of a stronger serum, giving 5 to 10 c.c. a day. He claims that no bad effects have resulted, even when as much as 50 c.c. has been injected at a time, the only results being redness and swelling at the site of injection, and in a few cases swelling of the lymphatic glands. The serum was also used with success in cases of chronic streptococcic bronchitis, and this the author holds to be evidence of the non-specificity of acute rheumatism. In the discussion on his paper before the Berlin Clinical Society there was general agreement as to the streptococcic origin of rheumatism, but many objections were urged to the use of the serum. Poynton²¹ has tried an antistreptococcic serum, obtained from the Pasteur Institute, in rheumatism, chorea, and other maladies, but without the slightest effect. Chipman²² records the case of a woman who, after exposure to cold wind and low temperature, had a severe attack of acute rheumatism, complicated apparently by streptococcus infection. After about six weeks' use of salicylates the temperature was still septic, but rapid improvement followed the use of antistreptococcic serum.

W. H. Coupland²³ recommends the use of **Methyl Salicylate** as an external application in acute rheumatism, even in the case of acutely inflamed joints. Internally he is in favour of the use of **Alkalies**, and prefers sodium salicylate to other drugs of its group. Among complications he refers to the occasional occurrence of inflammation of the crico-arytenoid joint and of multiple neuritis. W. H. Thomson²⁴ lays great stress on attention to the skin in acute rheumatism, holding that the sudden cold produced by the evaporation of sweat in a rheumatic patient

is apt to induce pericarditis or pleurisy. He believes that the use of salicylates has increased the frequency of cardiac troubles, which may be averted, according to him, by the use of **Alkalies** and **Aconite**. For the subsequent anæmia he recommends the use of **Cod-liver Oil** with small doses of **Arsenic**. Of the salicylates he prefers the **Strontium** salt as being less depressing than the sodium in tedious subacute cases; he says it is often better to leave off salicylates and give **Lemon Juice**. McGee²⁵ uses sodium salicylate in combination with an alkali. He also recommends the use of oil of wintergreen given in capsules. Of the newer products he favours **Aspirin**; for cardiac complications he advises rest in bed and **Opium**, and when the active symptoms have subsided he gives **Sodium Iodide** or syrup of **Hydriodic Acid**.

Huchard²⁶ looks upon **Salicylate of Soda** both as a cure for acute rheumatism and a preventive of its cardiac complications; he lays down these rules as to its administration: that it should be given in large doses at first, then repeated in smaller doses, and continued after the relief of the pain. Children bear it particularly well. The symptoms of salicylism are said to be due to impurities in the drug, and are very rarely seen when the natural or the physiologically pure salt is used. Wilkinson²⁷ holds that sodium salicylate neutralises the rheumatic toxin rather than attacking the germs; hence it alleviates the joint symptoms, but not the cardiac ones. He gives it in moderate doses, with tincture of **Nux Vomica** and **Potassium Citrate**. He recommends the use of **Local Blisters** over the affected joints. Wild²⁸ compares the evanescent joint lesions of acute rheumatism to urticaria, which is certainly in many cases produced by the absorption of toxins from the alimentary canal. He holds that the chemical evidence is in favour of the neutralisation of these toxins by the salicylates.

Syers²⁹ will not admit that salicylates do more in rheumatic fever than relieve the pain and to a certain extent reduce the temperature; he considers that their utility has been much exaggerated, and that they will be employed much less habitually as time goes on.

Timireff³⁰ recommends the use of an **Ointment** containing $2\frac{1}{2}$ drachms of **Salicylic Acid** and 3 ounces of lard, together with a little turpentine, as an external application in rheumatism; he maintains that it relieves the disease without irritating the stomach. Bourget³¹ prescribes an ointment of almost identical constitution. Post³² recommends painting rheumatic joints

with pure **Ichthyol**, which is then covered with cotton and oil silk ; this is repeated every eight hours. In chronic cases he gives ichthyol internally as well ; in the acute form he administers **Salicylate of Soda**. This treatment is also recommended in the *Medical Press*.³³

Serafide³⁴ recommends the treatment of acute rheumatism by **Massage with Petroleum**, and supports his view by the record of 14 cases under his care ; he states that the treatment has a rapid effect upon the fever and pain, that when it is used the average duration of the disease is only eight days, and that albuminuria and other drawbacks are absent.

Patton³⁵ discusses the prevention of cardiac complications in acute rheumatism. He recommends that the pain and fever should be allayed by pure **Salicylic Acid**, combined with the **Alkaline Diuretics**. He considers that cold applications to the precordia are more effectual than hot, though the latter are better borne by children. He also recommends **Aconite**, especially in combination with **Sodium Bromide**, for the purpose of quieting and slowing the heart.

Bloch³⁶ recommends Schleich's infiltration with **Tropacocaine** for rheumatic neuralgia and myalgia, especially lumbago and sciatica. If the case is really rheumatic, he states that the cure is very rapid, lumbago getting well with one injection, sciatica with four, and so on. Relief is less in chronic cases, and in non-rheumatic forms the method is useless ; it is hence of great value from the diagnostic standpoint ; many illustrative cases are quoted.

Shellenburg³⁷ records the case of a patient suffering from cerebral rheumatism which did not yield to the use of the ice-bag applied to the head, but which was rapidly cured by the **Cold Bath**.

J. O'Connor³⁸ has performed **Arthrotomy** in 20 cases of acute rheumatism, and reports that this resulted in an early cessation of the toxæmia, while at the same time the heart escaped.

REFERENCES.—¹*Inaug. Dissert. Göttingen*, 1901 ; ²*Zeits. f. klin. Med.* vol. xlv, Nos. 5 and 6, 1902 ; ³*Med. Chir. Trans.* vol. lxxxv ; ⁴*Gaz. des Hôp.* April 4, 1903 ; ⁵*Ann. de l'Inst. Pasteur*, Jan. 1902 ; ⁶*Pract.* Feb. 1903 ; ⁷*Brit. Med. Jour.*, Jan. 31, 1903 ; ⁸*Ibid.* Sept. 19, 1903 ; ⁹*Jour. Amer. Med. Assoc.* Jan. 1, 1903 ; ¹⁰*Deut. Arch. f. klin. Med.* lxxvi, 1-3, 1903 ; ¹¹*New York Med. Jour.* July 5, 1902 ; ¹²*Brit. Med. Jour.* Jan. 3, 1903 ; ¹³*Ibid.* ; ¹⁴*Arch. Gén. de Méd.* Sept. 1902 ; ¹⁵*Med. Press*, June 3, 1903 ; ¹⁶*Ibid.* Dec. 3, 1902 ; ¹⁷*Ibid.* June 10, 1903 ; ¹⁸*New York Med. Jour.* July 5, 1902 ; ¹⁹*Wien. Med. Zeits.* Nos. 31-4, 1902 ; ²⁰*Zeits. f. diät. u. Phys. Therap.* July, 1902 ; *Therap. der Gegenw.* July, 1902 ; *Berlin klin.*

Woch. No. 23, 1902; *Zeits. f. klin. Med.* xlvii, Nos. 1 and 2, 1902; ²¹*Pract.* July, 1903; ²²*Phil. Med. Jour.* June 28, 1902; ²³*Clin. Jour.* May 20, 1903; ²⁴*Med. News*, Aug. 23, 1902; ²⁵*Cleveland Med. Jour.* July, 1902; ²⁶*Bull. Gén. de Thérap.* vol. cxliv, p. 517, 1902; ²⁷*Brit. Med. Jour.* Jan. 3, 1903; ²⁸*Ibid.*; ²⁹*Treatment*, Jan. 1903; ³⁰*Rev. de Thérap.* Nov. 1, 1902; ³¹*Prog. Méd.* June 21, 1902; ³²*Therap. Gaz.* Sept. 1902; ³³Nov. 20, 1902; ³⁴*Rev. Sanit. Milit. de Bukarest*, 10-11, 1902; ³⁵*New York Med. Jour.* July 5, 1902; ³⁶*Therap. Monats.* July, 1902; ³⁷*Med. Rec.* Jan. 10, 1903; ³⁸*Lancet*, Jan. 24, 1903.

RHEUMATISM, (Chronic).

Bertram Abrahams, M.B., B.Sc., M.R.C.P.

ETIOLOGY AND PATHOLOGY.—The nomenclature of this group is, as pointed out in the *Medical Annual* for 1903, extremely unsatisfactory. In it will be described cases of chronic joint disease which cannot be relegated to any other category, and also the affection referred to by Continental writers as arthritism, which in itself comprises a variety of pathological conditions. Hawthorne¹ shows the confusion which has arisen from the loose use of terms such as rheumatic and rheumatoid. The latter, which was originally intended to indicate a non-rheumatic condition, is now often used in exactly the reverse sense. He proposes to employ the term chronic arthritis, qualified by a distinctive adjective when the etiology is known. Walsh² enumerates four conditions which are in the United States often termed chronic rheumatism without adequate cause. One is the relaxation of joints associated with deformities, such as flat-foot; in these conditions the patients are extremely susceptible to influence by the changes of the weather. Another group is that of the occupation-neuroses. In a third the symptoms are attributable to neuritis, and in the last are really of gouty origin. When these and the varieties of rheumatoid arthritis are excluded, the domain of chronic rheumatism becomes exceedingly restricted. In a second paper³ he states that the use of **Salicylates** in chronic non-rheumatic cases does more harm than good. He holds that most cases of obstinate subacute rheumatism consist of a joint affection developing in the presence of some diathesis, such as gout, or some toxæmia or a neurosis, or a supersensitive condition of the vaso-motor system. Burchard⁴ describes a case of intermittent hydrarthrosis occurring in a nervous woman of forty-five; she had been suffering for twenty-five years with painless attacks of dropsy in the knee, each of which lasted four days; they were closely related to menstruation, were quite painless, and unassociated with

inflammation. She also suffered from asthma, which, however, remitted during the joint attacks. Burchard considers the condition to be a vaso-motor neurosis. Luff⁵ states that this condition was first described by Sir William Bennett, and occurs almost exclusively in women, being associated chiefly with uterine and menstrual troubles.

TREATMENT—Scott-Carmichael⁶ summarizes the hyperæmia treatment devised by Professor Bier, of Bonn. In this a **Rubber Bandage** is applied to the limb above the affected joint, its action being combined with that of **Dry Heat** applied in a wooden box; the principal advantages claimed are that of soothing pain, of weakening or destroying bacteria, of promoting absorption, of dissolving and softening clots and thickenings, and of increasing nutrition and promoting growth. He recommends its use particularly in tuberculous disease and in ankylosis of joints. The use of **Hot Air** is strongly advocated by Skinner,⁷ who applies it not only locally, but also to the whole body. The local apparatus should, according to him, have the power of developing a temperature of 400° F. in twenty minutes, and maintaining it indefinitely; the body apparatus should be capable of producing a temperature of 350° F. in half an hour, and also of maintaining it indefinitely. Calhoun⁸ treats hydrarthroses and hæmarthroses by dry air at 115° C., applied for an hour a day for eight or ten days, followed by massage and, if necessary, electricity to the muscles. Machtzum⁹ treats chronic rheumatism by physical means combined with massage. He produces local hyperæmia by hydrotherapeutics, preferably by means of steam. For multiple joint affections he recommends a **Sweat Bath**, especially combined with light. Another treatment which is highly recommended¹⁰ for chronic rheumatism is that of **Sodium Iodide** combined with wine of **Colchicum Seeds**, or **Oil of Gaultheria**. Begg¹¹ recommends **Cataphoresis** in the treatment of gout, rheumatism, and rheumatoid arthritis. He applies the positive electrode well soaked in a solution of potassium bicarbonate to the affected part. Stearns¹² advocates a 2 per cent solution of **Chlorine Dioxide** in water as an internal remedy in rheumatism; he combines it with the use of **Sodium Phosphate** as an occasional laxative, and prescribes also large draughts of water. Rose¹³ states that very good results in the treatment of rheumatism can be obtained by the repeated use of the warm bath. Luff¹⁴ recommends in the cases of quiet effusion into the knee-joints, **Massage and Exercise**. Splints

and rest of the joint are contra-indicated. The uterine functions should be attended to.

Siebert¹⁵ records a case in which a serous effusion in the knee-joint, the result of an accident, which had resisted all ordinary forms of treatment for eighteen months, yielded rapidly to the use of **Violet Light** for twenty-five minutes a day, and was cured in five weeks. Poliansky¹⁶ treats chronic rheumatism and allied complaints by injections of a 5 per cent solution of **Sodium Iodide**. Blumenthal¹⁷ showed a woman cured of chronic articular rheumatism by Menzer's antistreptococcic serum (see "Rheumatism, Acute"). Triquet¹⁸ states that the basis of arthritism is a sluggishness in the performance of the functions of nutrition, and recommends that the maladies therefrom resulting should be treated by oxidation. The means he adopts are regular exercise, massage, and shampooing, combined with the internal administration of **Alkalies** and a preparation of **Iron**. Pascault¹⁹ considers that the chief cause of arthritic manifestations is over-feeding; his principal rules are methodical mastication, the use of a vegetable diet, and the avoidance of alcohol. Levi²⁰ recommends the following powder to be taken internally as a substitute for Trunczek's serum in certain diseases caused by arthritism:—

R Sodium Chlorine	10 grams.	Magnesium Phosphate	$\frac{3}{4}$ gram.
Sodium Sulphate	1 gram.	Sodium Carbonate	$\frac{5}{8}$ gram.
Calcium Phosphate	$\frac{3}{4}$ gram.	Sodium Phosphate	$\frac{1}{3}$ gram.

This mixture is divided into thirteen capsules, of which one or two are to be taken daily.

REFERENCES.—¹*Polycl. March*, 1903; ²*Boston Med. and Surg. Jour.* May 21, 1903; ³*Med. Rec.* Dec. 13, 1902; ⁴*Deut. Med. Woch.* No. 21, 1902; ⁵*Clin. Jour.* Oct. 7, 1903; ⁶*Scot. Med. and Surg. Jour.* July, 1903; ⁷*Boston Med. and Surg. Jour.* April 9, 1903; ⁸*Jour. de Méd. et de Chir. Prat.* July 10, 1902; ⁹*Therap. d. Gegenw.* June, 1902; ¹⁰*Γατρικὴ Ἡρώδης*, Jan. 1, 1903; ¹¹*Edin. Med. Jour.* Dec. 1902; ¹²*Med. Rec.* Dec. 13, 1902; ¹³*Ibid.*; ¹⁴*Clin. Jour.* Oct. 14, 1902; ¹⁵*Med. Woche*, Sept. 2, 1901; ¹⁶*Prakt. Vrach*, Nov. 16, 1902; ¹⁷*Med. Press*, May 6, 1903; ¹⁸*Presse Méd.* May 21, 1902; ¹⁹*Gaz. des Hôp. Civ. et Mil.* Sept. 6, 1902; ²⁰*Therap. Gaz.* Aug. 15, 1902.

RHEUMATOID ARTHRITIS (Arthritis Deformans).

Bertram Abrahams, M.B., B.Sc., M.R.C.P.

ETIOLOGY.—Page, Poynton and Paine¹ have isolated from an arthritis of the knee a diplococcus indistinguishable from those found in rheumatic fever; they state that both rheumatic and rheumatoid changes were produced by the microbe when injected intravenously into rabbits. Gask² has obtained a streptococcus

from a case of acute rheumatoid arthritis in a woman aged twenty-nine, following her confinement. It was indistinguishable from the streptococcus pyogenes, but was non-virulent. Macalister³ holds that some obstinate cases of arthritis can be traced to nasal infection. In a summary of the subject, Poynton⁴ maintains in opposition to Stengel⁵ that the presence of micro-organisms in rheumatoid arthritis is established.

Merrins⁶ discusses the etiology of Heberden's nodes. He regards their occurrence in gout as coincidental rather than complicatory, and he has not confirmed Charcot's statement that they may be due to cancer. These nodes are very common in France, and from an analysis of 1000 cases Bouchard concludes that they arise as the result of gastro-intestinal auto-intoxication. Curiously enough not one of these patients had rheumatoid arthritis. Senility is a common cause of the nodes; they are of frequent occurrence in women of over sixty years of age, in whom they have no pathological significance. It is now customary to regard cases in which they occur without other joint symptoms as a special type of rheumatoid arthritis, and this view derives support from the fact that after years of quiescence they may go on into the graver malady. Out of 27 consecutive patients with Heberden's nodes, seen by the writer, in 19 the general disease was unmistakably arthritis deformans; of the others, two patients were gouty, one senile, and the remaining five, women in whom the nodes appeared about the time of the menopause. It is noteworthy that wear and tear play an important part in the genesis of the affection; thus it is particularly common among old women who have habitually used the small joints of the hands in needlework and other feminine occupations. Merrins further compares the formation of nodes to the fibrous ankylosis of the phalangeal articulations which is sometimes seen in Raynaud's disease. He holds that the main factors in their production are firstly, a mechanical, chemical, or toxic irritant in the system; secondly, impaired general vitality; and thirdly, circulatory abnormality due to vasomotor disturbance, or arterio-sclerosis. These changes are most likely to occur in those chronic diseases in which the bones and joints become affected, such as gout and rheumatoid arthritis.

TREATMENT.—Luff⁷ holds that if rheumatoid arthritis is recognized early in the acute stage it is curable; many disasters, however, result from mistaking it for gout. The diet should be liberal, woollen clothing should be worn next to the skin, and

plenty of exercise taken. The most valuable drugs are **Guaiacol**, best in the form of **Carbonate**, and **Potassium Iodide**. In the former of these Luff has the greatest confidence. He gives at first 5 grains three times a day and gradually increases it until 15 to 20 grains are being taken in each dose. The treatment must be continued for at least twelve months. He also recommends **Thermal Treatment** of the affected joints, particularly by means of douche massage, peat baths, and hot air baths. With regard to **Massage**, he recommends that it should be at first general, and afterwards restricted to the particular joints affected.

Bishop⁸ summarises the treatment as consisting of suitable **Diet**, and **Electricity**; under the former head the avoidance of starchy food is particularly recommended. He applies static electricity as sparks to the joints, and as currents and sparks to the spine. He considers that medicines are better dispensed with. Dreschfeld⁹ recommends **Physical Methods** in the early stages, and weak galvanic currents when much pain and muscular atrophy are present. Buckley¹⁰ calls attention to the importance of lesions of the respiratory and genito-urinary tracts as seats of infection, and suggests that they should be carefully treated when present. As a general remedial measure he advocates change of subsoil. Clemens¹¹ holds that **Ferrous Iodide** given in drachm doses three times a day over a period of two to three months, exercises a specific influence in rheumatoid arthritis, and Neumann¹² claims the same for **Superheated Air**.

Chronic Joint disease in Children (Still).—Luff¹³ summarises the symptomatology of this disease, which is usually accompanied by a general arrest of bodily development, but is not in itself necessarily fatal. He states that the four important points in its diagnosis from rheumatoid arthritis are, firstly the enlargement of the glands, secondly the enlargement of the spleen, thirdly the peculiar appearance and doughy feel of the joints, and the absence of bony grating on manipulation and of osteophytic outgrowth, and fourthly the fact that the disease begins nearly always in the knees or wrists, and affects the fingers much later.

Whitman¹⁴ describes two cases of this affection, one of which was fatal, while the other ended in recovery. In the former there was fusiform enlargement of the joints, particularly the wrists and knees, together with extreme muscular atrophy. The joints chiefly affected were at different times opened and swabbed with pure **Carbolic Acid**, and washed with salt solution; this procedure

lessened the discomfort, but did not otherwise influence the disease. Before death the skin generally became excessively thin and transparent. At the *post-mortem* examination no micro-organisms were found; there was amyloid degeneration of the liver, spleen, and mesenteric glands; the cortical substance of the bones was exceedingly thin, as also were the articular cartilages; the affected joints contained much mucoid granulation tissue, which had in places produced worm-eaten erosions of the cartilages. The other case was similar in nature; the left knee-joint was operated on, as above described; the patient eventually made a complete recovery under the influence of **Electric-light Baths**. Whitman believes that the disease commences in the synovial membrane. The principal points in which his cases differ from those previously recorded are, firstly the recovery of one of them, secondly the great enlargement of the liver in both, thirdly the escape of the spine in both, and fourthly the involvement of the small joints of the fingers and toes in the fatal one. The paper is illustrated by excellent photographs and skiagrams.

REFERENCES.—¹*Clin. Soc. Trans.* vol. xxxv; ²*Lancet*, May 9, 1903; ³*Med. Press*, Dec. 1902; ⁴*Pract.* July, 1903; ⁵*Amer. Jour. Med. Sci.* March, 1903; ⁶*New York Med. Jour.* Feb. 14, 1903; ⁷*Clin. Jour.* Oct. 14, 1903; ⁸*Jour. of Adv. Therap.* Feb. 1903; ⁹*Brit. Med. Jour.* Jan. 3, 1903; ¹⁰*Ibid.*; ¹¹*Therap. Gaz.* Dec. 1902; ¹²*Lancet*, March 30, 1901; ¹³*Loc. cit.*; ¹⁴*Med. Rec.* April 18, 1903.

RHINITIS, (Atrophic).

H. Lambert Lack, M.D., F.R.C.S.

ETIOLOGY.—Symes,¹ of Bristol, has repeated the experiments of Belfante and Vedova, who in 1895 found the Klebs-Löffler bacillus in the nasal cavities of persons suffering from atrophic rhinitis. He examined twenty-three cases, in twenty of which—87 per cent—a bacillus was found resembling in morphological and cultural characteristics the true Klebs-Löffler bacillus. In seventeen the organism was described as the long, and in three as the short variety of the diphtheria bacillus. The only other organisms frequently present were bacillus termo, various micrococci, and the bacillus mucosus, the last being noted in sixteen cases. He states that the long diphtheria-like bacillus was not found in healthy noses, but that in 58 per cent of young children a short pseudo-diphtheritic type of bacillus was present.

Freudenthal² concludes that ozæna is an atrophy of all the internal walls of the nose, due to too great dryness of the air. To convert this atrophy into ozæna, a bacillary invasion *en masse* is necessary, but this can only occur where atrophic conditions

pre-exist. Thus ozæna is an autochthonous affection, which supervenes on atrophy.

Moure² considers that atrophic rhinitis commences in childhood as a *rhinitis purulenta*, generally accompanied by one or more sinusites, and therefore is, so to speak, a secondary affection. It can be checked if treated in its early stages, that is before the atrophic process is thoroughly established, or the formation of fœtid crusts is begun.

TREATMENT.—Lake³ was apparently the first to attempt to restore the atrophied inferior turbinate by a submucous injection of **Melted Paraffin**. He used wax melting at 105° F. The syringe held about thirty minims, and the needle used was about 2½ inches long. Even then it was extremely difficult to inject some cases in which complete atrophy had taken place. Sometimes one injection sufficed, in other cases several minims a week were injected. As a result of the restoration of the turbinate, the patients expressed themselves "as being far more comfortable, and of feeling the air passing through their noses." The formation of crusts had not recurred in cases where it had been checked before injection, and the crust formation had been more rapidly checked in cases where it was still present.

Brindel⁴ reports the results of ten cases treated with injections of paraffin according to the method of Eckstein. The injections caused an artificial painless hypertrophy of the mucous membrane. He used paraffin melting at 60° C., first injecting the posterior portion of the inferior turbinate, and subsequently the anterior portion. This method of injection is employed to avoid the danger of phlebitis of the facial vein, which occurred in two cases when single injections of four to five cm. were made near the anterior nares. The treatment of the first patient took place five months before the report, and there had been no return of the unpleasant symptoms in either of the ten cases reported on. The only ill effect following injection was a slight œdema under the eyes, which disappeared in a few days.

Moure² considers that the nose should be irrigated regularly, and **Massage**, followed by a **Nitrate of Silver Spray**, gives excellent results. Hypertrophy of the inferior and middle turbinates ought not to be treated, unless polypoid. In true ozæna in young children, it is best to use only irrigations until the age of six, eight, or ten. Then an attempt may be made to reconstruct the turbinates by means of interstitial injections of paraffin. Moure and Brindel⁵ report that seventy cases have been thus

treated during the preceding fifteen months, and there is no doubt that the method marks a decided step in advance in the treatment of ozæna.

Stuart Low⁶ speaks very highly of the action of **Mucin** in cases of atrophic and dry rhinitis; he states that mucin is bactericidal and hygroscopic: when applied locally to the interior of the nose and pharynx it has a soothing and emollient action. It moistens the surface and softens crusts, facilitates their removal, and prevents their re-formation. It also restores the nasal functions of smell, filtration, and warming, because in the dry condition the nasal mucous membrane is functionless. He states that he has found even long-standing cases of atrophic nasal and pharyngeal trouble do very well after regular douching twice daily with solution of **Soloid Mucin Co.** without any other irrigations. Many chronic cases have been able to dispense with treatment to a greater extent than two or three times weekly.

Ign. Dionisio⁷ has treated six cases of atrophic rhinitis with the **Electric Light**, directing the light by reflectors into the nose, or actually introducing a lamp with a water jacket into the nostril. This treatment resulted in a decrease of the crusts and secretion, and disappearance of the fœtor. Two cases, in which previous treatment had been ineffective, now require no irrigation at all. Dionisio believes it is a valuable addition to the therapeutics of ozæna, because present methods are merely palliative.

REFERENCES.—¹*Brit. Med. Jour.* Feb. 28, 1903; ²*Jour. Laryng.* June, 1903, and *Archiv. f. Laryng.*; ³*Lancet*, Jan. 17, 1903; ⁴*Therap. Gaz.* Dec. 1902; ⁵*Jour. Laryng.* June, 1903; ⁶*Lancet*, April 5, 1902; ⁷*Gaz. Med. Itali*; *Brit. Med. Jour.* May 10, 1902.

RICKETS.

G. F. Still, M.D.

The ETIOLOGY of this disease has long been under discussion. Whilst in this country it is generally regarded as almost entirely dependent upon diet, in other countries attempts have been made to find some other cause; thus Mendel,¹ partly on account of observations showing atrophy of the thymus, and partly on account of results of treatment with **Thymus Gland**, considers that there is some causal relation between rickets and perverted function of the thymus. It has been suggested that by some internal secretion the thymus exercises considerable influence on the development of bone, and that the enlargement of the spleen in rickets may be a compensatory hypertrophy; the spleen may in fact replace some function of the thymus gland. Edlessen² supports the infective theory; he asserts that rickets

has a seasonal incidence, and that it tends to occur in certain houses. Hutchison³ points out that rickets has increased in England because the factors which predispose to it are becoming more pronounced; one of these is the growing inability of women to suckle their infants, another is the employment of female labour, whilst a third is the tendency for the population to crowd together in large towns.

TREATMENT.—The importance of a full proportion of **Cream**, or even more than the average, in the milk as given is insisted upon by Burney Yeo.⁴ **Raw Meat Juice** also he recommends, or raw meat pulp, the latter up to 2 ounces daily according to the age of the child; and for drugs, **Cod-liver Oil** made into an emulsion with lime-water and sweetened with milk-sugar, so that 1 drachm of the mixture contains 10 to 15 minims of the oil.

Mendel, in the paper referred to above, states that he has treated over 100 cases of rickets with **Thymus**, using first the fresh gland minced and given as a thick soup in doses of as many grains as the child was months old; recently he has been using the gland in tabloid preparation. The results he considered to be highly satisfactory; the symptoms all gradually disappeared, and in no case did he meet with any bad effects from the use of thymus.

The use of **Phosphorus**, which has been in vogue for many years in some places, but is probably far less esteemed than cod-liver oil in this country, is advocated again by Concetti.⁵ It is important that the phosphorus should be thoroughly dissolved, otherwise very irregular doses may be given, with harmful results. A small amount of phosphorus should be dissolved in ether, and then mixed thoroughly with a little almond oil. To this cod-liver oil is to be added, and the mixture put into a water-bath and warmed. In this way the phosphorus is completely dissolved and the ether is eliminated. The best proportion is 1 c.c. of phosphorus to 100 grms. of cod-liver oil, to be kept in an air-tight bottle and shaken thoroughly before using. The dose is $\frac{1}{20}$ cgrm. morning and evening before meals, in a teaspoonful of oil or in a dessertspoonful of emulsion.

Recently, however, evidence has been adduced to show that phosphorus as a treatment for rickets is not without dangers of its own. Three cases have been reported in which when this treatment was adopted the child developed jaundice and died, and *post-mortem* examination showed appearances consistent with phosphorus poisoning. Ungar⁶ considers the causation of death, however, unproved in these cases, and himself gives

$\frac{1}{120}$ grain phosphorus daily, dissolved in olive oil or oil of almonds. This he has found most valuable, especially for arresting the laryngismus of rickets.

Ausset⁷ considers that the success of phosphorus in the treatment of rickets probably depends upon the fact that it supplies the stimulus to development which is lacking owing to defect of the thyroid function in rickets. The thyroid is rich in phosphates; and foetal rickets has been known to follow removal of the thyroid from mothers. He states that **Extract of Thyroid** is certainly beneficial in rickets.

REFERENCES.—¹*Münch. Med. Woch.* in *Brit. Med. Jour.* March 8, 1902; ²*Cent. f. innere Med.* in *Brit. Med. Jour.* Nov. 15, 1902; ³*Clin. Jour.* March 18, 1903; ⁴*Ibid.* March 4, 1903; ⁵*Allg. Wien. Med. Zeit.* Jan. 27, 1903; ⁶*Münch. Med. Woch.* in *Brit. Med. Jour.* Sept. 6, 1902; ⁷*Gaz. Hebdom.* in *Brit. Med. Jour.* Nov. 9, 1901.

RINGWORM.

Norman Walker, M.D.

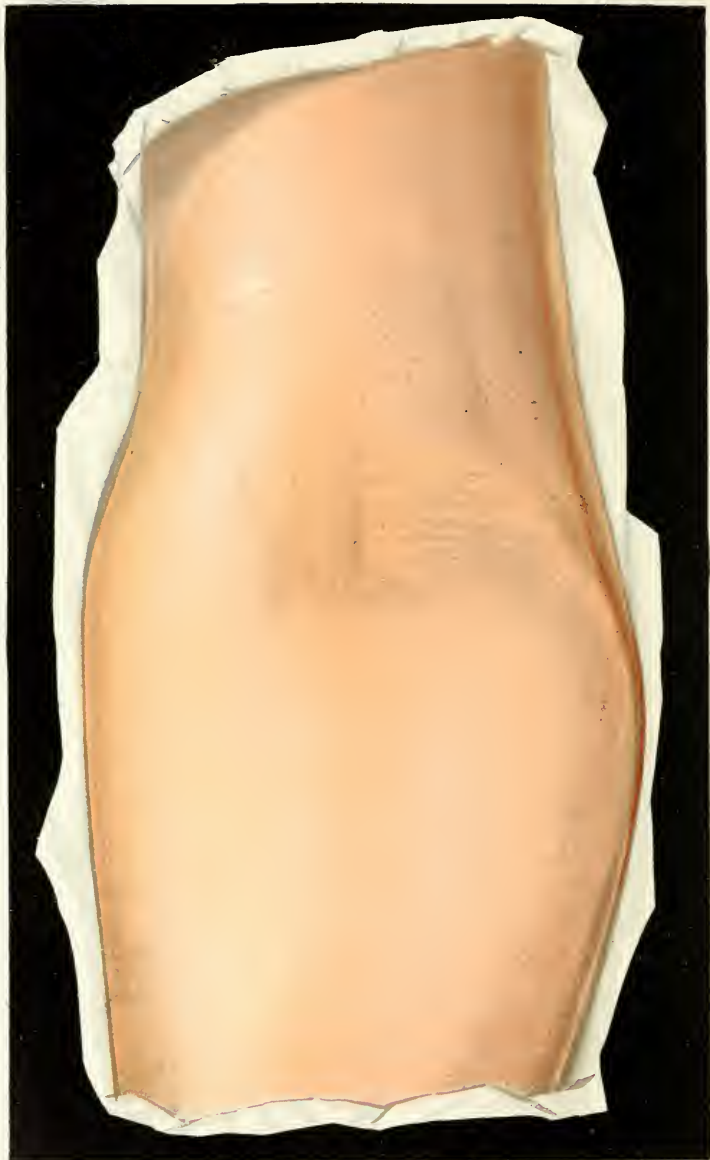
Researches are being prosecuted widely as to the nature of the different fungi, but the results mainly interest the expert, except in so far as they point out the close relationship of this disease to domestic animals.

Mewborn¹ records two cases of small-spored type contracted from a cat, one of the cases occurring in a girl sixteen years of age. In another article² he describes an instance of the co-existence of favus of the scrotum and ringworm of the thigh in a man aged twenty. One cannot help being sceptical when he states that both these conditions gave identical cultures, and therefore that the two diseases are caused by altered forms of the same fungus.

Leslie Roberts³ has been able to trace the origin of a series of cases to the arrival of an infected kitten from Egypt; the first case occurring in a week from that time. In the cultures many gonidia appeared in the older parts, as commonly occurs in animal ringworm fungi, and he suggests that this may mean that they pass dormant, if not even active, periods on some vegetable substratum.

TREATMENT.—**Epicarin**—a condensation product of creotinic acid and naphthol—is highly spoken of by Harlingen and Dillard.⁴ They used a 10 to 20 per cent alcoholic or soda solution, or ointment of the same strength, and out of 31 cases obtained their best results on those affecting the scalp, the remedy proving too irritating for the body.

REFERENCES.—¹*New York Med. Jour.* Nov. 15, 1902; ²*Amer. Jour. Cut. Dis.* Jan. 1903; ³*Brit. Jour. Derm.* Sept. 1903; ⁴*Amer. Jour. Med.* June, 1903.



(Ralph C. Richards, ad nat del.)

Scarlet Fever.

MEDICAL ANNUAL, 1904.

MORRISON & GIBB LTD EDINBURGH

SCARLET FEVER.*E. W. Goodall, M.D.*

Plate XXI represents the rash of scarlet fever at the bend of the elbow. The rash is usually pretty well-marked on the flexures of the joints, in which situations, also, it is often petechial, as is shown in the plate. In the case depicted the rash was finely punctate; it is not at all unusual for the puncta to be larger and coarser.

Plate XXII shows the most characteristic and one of the most common forms of desquamation in scarlet fever. In this form desquamation commences with the appearance of minute white points. These points consist of the horny layer of epithelium in the act of being shed. Presently the centre of the point breaks away, leaving a small round hole in the horny layer like a pin-hole. As the edge breaks away in its turn, the hole increases in size; finally the circles coalesce with one another to form large and irregular figures.

In many cases of scarlet fever, however, this pin-hole desquamation is not present, but from the very commencement peeling consists of the shedding of fine, branny scales. This occurs, especially in slight cases, with little rash, and in infants. In a third variety, where the pin-hole appearance is also wanting, the epithelium separates in very large and thick masses or scales. This form of desquamation is seen in some of the very severe cases where the rash has been intense.

It must not be forgotten that some cases of scarlet fever do not peel at all, and that peeling, at times profuse, follows other erythematous affections.

In the last volume of the *Medical Annual* reference was made to the employment of an **Anti-streptococcic Serum** in scarlet fever by Moser, of Vienna. During the past year Baginsky¹ (of Berlin) and Fischer (of New York)² have been trying a similar serum made by Aronson. The serum was obtained by immunising horses with cultures of streptococci from the bone-medulla of patients who had died of scarlet fever. From 0.03 to 0.1 c.c. of this serum protected mice from a fatal dose of a highly virulent culture of streptococci. Charlton,³ of Montreal, has been employing an anti-streptococcic serum made under the direction of Hubbert. None of these observers draw a definitely favourable conclusion from the cases they have treated, for as they all admit, the number is too small; 62 by Baginsky, 2 by Fischer, and 15 by Charlton. Scarlet fever is at the present time so mild an affection that the statistical method of proof would

be available only with very large numbers of cases. All that can be said of the results now referred to, is that there is ground for persevering in the treatment in a much larger number of cases, as it did no harm, and possibly did good.

Louis C. Parkes¹ has an article on "The infectivity of the later stages of scarlet fever, and hospital isolation," which is worth referring to. The general opinion in the medical profession is that the late desquamation of scarlet fever is infectious, and hence it is still customary to keep all cases of that disease isolated until desquamation has finished. But for some time past the view has been gaining ground amongst superintendents of fever hospitals and medical officers of health, that this opinion is erroneous. The following are some of the reasons for this change of view: (1) Desquamation occurs in other infectious diseases in which there is an erythematous eruption, yet it has not been suggested that in them this desquamation is infectious. (2) Scarlet fever is a disease which is very similar to diphtheria in some of its symptoms. It is well known that in diphtheria the infective organism flourishes chiefly in the discharges and exudations from the fauces and nasal passages. It is very likely, therefore, that the same may be true of scarlet fever. (3) At some of the fever hospitals it has become the practice lately to discharge patients who have recovered from scarlet fever before the desquamation has finished, and there does not appear to have been in consequence of this action any increase in the number of "return" cases. [This, however, is a point which is not yet definitely settled.—E. W. G.]. "The so-called 'return' cases are the cases occurring in a house to which a hospital scarlet fever patient has recently returned. They are not, of course, always consequent upon or secondary to, the returned hospital patient."

Parkes goes on to point out that this question of the length of infectivity of a patient convalescent from scarlet fever is one of great importance to the community. Large numbers of patients suffering from scarlet fever are treated every year in rate-supported hospitals, and if it can be demonstrated that it is unnecessary to detain these patients in hospital until desquamation has become completed, a great saving will be effected. He also draws attention to the marked diminution in the general mortality and the case mortality of scarlet fever that has been going on during the past five-and-twenty to thirty years, and that this is not due to a lessened prevalence. The type

PLATE XXII.



Photo J. Neale.

SCARLET FEVER.

(Desquamation.)

has changed. It is perhaps, unnecessary to isolate so large a number of the cases as is being done. Some, indeed, believing that hospital isolation has done nothing towards checking the prevalence of this disease, boldly advocate its abolition. On this point Parkes writes as follows, and we think his words worthy of reproduction *in extenso* :—

“Most sanitarians would be decidedly averse to abandoning at the present time *in toto* the present system of hospital isolation of this disease. The public still have a dread of it—a mental attitude bequeathed from the time when scarlet fever was a very serious complaint for most of those who were attacked. Moreover, the public mind is still saturated with the belief that the ‘peeling’ stage of scarlet fever is the most infectious period of the illness. Much harm would accrue to the labouring population in loss of wages and neglected education of their children, if scarlet-fever hospitals were shut up, as neither employers nor schools would permit attendance from an infected house until a medical certificate of freedom from infection could be obtained. There are probably not many medical practitioners who would care at the present time to give such certificates, until desquamation had ceased. It would certainly not be wise to ask them to do so. It is only reasonable, however, that medical practitioners should permit the medical superintendents of fever hospitals to have for a time a free hand in this matter. If the profession will agree to abandon its belief in the infectivity of the later desquamating stage of scarlet fever, there are many medical superintendents who will undertake to shorten the detention in hospital of uncomplicated cases ; a marked reduction will soon be effected in the average duration of stay in hospital : the ratepayers will benefit in a saving of the cost of maintenance ; and the public will gradually be educated to take a view more consonant with the trend of modern scientific opinion than the attitude with which it is now credited.

“There is another reason why reform in the administration is preferable to abandonment of the system. Scarlet fever has been undergoing a gradual transformation of type, from severe to mild, during the past half century. There is a possibility of the continuance of this progressive decrease in severity until the disease becomes as little fatal as, say, chicken-pox. In that case, hospital isolation would probably be abandoned as an unnecessary procedure for a trifling ailment. There is, however, also the possibility of a recrudescence of severity of

type to be taken into account. This might occur at any time, and might be much more rapid than the previous decline. In such an event, the public would quickly demand the provision of hospitals for isolating the sufferers—a demand which would have to be met, even if only a short time previously these institutions had been dismantled or been converted into use for other purposes.”

[During the past three years the case-mortality of scarlet fever in London has been rising slightly. From what we know of the behaviour of this disease in past times, it would not be at all surprising to find its virulence becoming suddenly increased.—E. W. G.]

Le Sage⁵ recommends the use of the following ointments and solutions for the nasal discharge in scarlet fever.

R	Menthol	grs. iij		Petrolatum	3j
	Boric Acid	grs. lx			
		Fiat Unguentum.			

Or:—

R	Resorcin	grs. ivss		Petrolatum	3j
		Fiat Unguentum.			

Or the injection of the following oil:—

R	Essential Oil of Mint	℥xj		Olive Oil (sterilised)	3v
	Resorcin	grs. xv			

Ten drops of the mixture to be injected into each nostril night and morning.

REFERENCES.—¹*Berlin. klin. Woch.*, Dec. 1 & 8, 1902; *Brit. Med. Jour.*, Jan. 3, 1903; ²*Med. Rec.*, March 7, 1903; ³*Montreal Med. Jour.* Oct., 1902; ⁴*Pract.*, April, 1903; ⁵*New York Med. Jour.* Feb. 21, 1903;

SCIATICA.

Purves Stewart, M.A., M.D.

In certain cases of neuralgia, especially in sciatica, Cordier,¹ of Lyons, claims to have obtained immediate relief of pain by means of **Subcutaneous Injections of Atmospheric Air**, so as to distend the skin of the painful area. A hypodermic needle and some form of bellows are employed, together with an indiarubber bag to measure the amount of air injected. The air is filtered through a glass tube filled with sterilised wool. The *modus curandi* is supposed to be by forcible stretching of the nerve endings, and the formation of an air cushion protecting them from external pressure. After injection energetic massage is practised. In a patient of Cordier's suffering from post-herpetic neuralgia a single injection of half a litre of air gave instantaneous relief; antipyrin, massage, and counter-irritation

having previously failed. Out of 25 cases of sciatica Cordier claims to have cured 23, injections being given once a week for four or five weeks. He also recommends this process for cases of lumbago, in various forms of traumatic neuritis, and in gonorrhœal rheumatism. Marie² also records several cases of sciatica and one of post-herpetic neuralgia cured in this way.

For the past ten years Hölscher³ has treated cases of relapsing sciatica by exposing the nerve at its exit from the sciatic notch and applying for several days a **Tampon of Gauze** soaked in 5 per cent. **Carbolic solution**. Out of 15 cases 13 are claimed to have been permanently cured. Dry gauze is placed over the moist tampon to protect the superjacent tissues. The tampon is removed on the third day. A numb sensation in the calf is a common sequela, but this is generally transitory. Suppuration, however, usually occurred in Hölscher's cases. At the time of operation, if adhesions were found between the nerve and the neighbouring muscles, these were broken down. Renton,⁴ of Glasgow, obtained equally good results in nine out of ten cases by simple exposure of the nerve and the **Separation of Adhesions** around the nerve up to the sciatic notch. These were cases of sciatic perineuritis as distinguished from neuritis, the symptoms being characteristic, namely, pain whenever the patient walks, with cessation of pain on resting. Renton states that mild cases of adhesions improve with massage and electricity (either galvanism or high-frequency), but severe cases require operation. Sometimes six or eight weeks elapse before improvement sets in.

REFERENCES.—¹*Lyon M^d*. No. 13, 1902; ²*Med. Press*, Dec. 31, 1902; ³*Cent. f. Chir.* Jan. 11, 1902; ⁴*Brit. Med. Jour.* April 4, 1903.

SCLERODERMA.

Norman Walker, M.D.

Bertin¹ considers that the nervous system has a large part in the causation of this disease, and this apparently through the vascular system. Prognosis is uncertain, and a cure, in his opinion, has yet to be discovered. The chief palliatives appear to be vaso-dilators, **Cod-liver Oil**, **Arsenic**, and general hygienic measures.

Wills² and Griffiths³ both insist on its close relationship to Raynaud's disease. Sachs⁴ exhibited a case of generalised type in which **Thyroid Medication** had produced improvement. Eighteen grains daily was the maximum reached, and with this were combined **Warm Baths** and **Exercises**. At this same meeting Fränkel reported great benefit in one case from

anti-rheumatic treatment, particularly **Salicylates**, but he agreed with Sachs and Jacoby that **Thyroid** treatment was the best.

J. C. Johnston and Sherwell⁵ give an account of a condition which they call white spot disease, where white atrophic areas formed like a chain of beads over the chest below the clavicles. The histological examination revealed degeneration limited to the papillary and reticular layers, and the case was successfully treated by painting on a saturated solution of **Resorcin** in alcohol three or four times daily.

REFERENCES.—¹*Int. Med. Mag.* Dec. 1902 ; ²*Clin. Jour.* Oct. 22, 1902 ; ³*Med. Chron.* Oct. 1902 ; ⁴*New York Med. Jour.* Dec. 6, 1902 ; ⁵*New York Jour. Cut. Dis.* July, 1903.

SCLEROSIS, (Disseminated).

Purves Stewart, M.A., M.D.

Although this disease is clinically familiar to every neurologist, yet our knowledge as to its causation is still very deficient. In a critical review of the subject Williamson¹ discusses the various views which have hitherto been suggested,

As to the pathological anatomy, the well-known "islands" of sclerosis are found scattered hap-hazard throughout the central nervous system, sometimes also in the cranial or spinal nerves. Both white and grey matter in the central nervous system may be affected, more frequently the former. The parts of the nervous system adjacent to a diseased patch are normal. Besides their insular character and their irregular dissemination, a noteworthy characteristic is the absence in most cases of ascending and descending secondary sclerosis. This feature distinguishes disseminated sclerosis of the cord from other multiple lesions, such as disseminated myelitis and multiple syphilitic lesions. Microscopically the patches are usually sharply defined from the adjacent normal nerve tissues. Medullary sheaths are generally absent in the sclerotic patches, but sometimes at the margin of a patch there is a zone in which medullated fibres are present, though scanty ; in other cases this intermediate zone is practically absent, and the patch ends abruptly. At the periphery of some patches we may find granular cells, indicating that the morbid process is still active. The axis cylinders in the sclerosed patches often persist, even when the medullary sheaths have vanished, but even the axons occasionally degenerate and disappear. The ganglion cells of the grey matter escape degeneration for a long period, but at a very advanced stage they, like the axis cylinders, may disappear also. The neuroglia in the patches is greatly

increased, and may form a dense network. Fatty, granular cells are often present, especially at the periphery of a patch, more so in recent patches than in older ones. The blood-vessels are sometimes normal, in other patches they may be thickened and hyaline, or may show endo- or peri-arteritis. Sometimes the perivascular lymph spaces are filled with round cells, granular cells, and fat globules. It is important to notice that patches occur in different stages of development in the same case, showing that the morbid process persists, and induces the formation of new patches long after the onset of the disease.

What explanation can be offered of these appearances? Some observers, such as Strümpell, regard the neuroglia proliferation as the primary change, and the degeneration of nerve fibres as a secondary result. Others, including many recent observers, believe the degeneration of nerve fibres to be primary, and the proliferation of neuroglia secondary. Others again have attributed the changes both in the neuroglia and in the nerve elements to vascular disease, the remarkable irregularity of distribution, and its total disregard of nerve tracts or fibres, being highly suggestive of a primary change either in the blood-vessels or the lymphatics. But whilst in some cases vascular changes have been found, in others they have been absent, and the areas of disease do not necessarily correspond with the distribution of a blood-vessel. Williamson therefore believes that whilst the evidence is against actual primary vascular disease as the cause of disseminated sclerosis, there is much to be said in favour of it being due to some irritating or toxic substance circulating in the blood-vessels and lymphatics. The perivascular lymphatics in recently observed cases have frequently been found dilated, and containing granular cells and other degeneration products. This would suggest, according to Williamson, that the toxin in the circulation stimulates the lymphatic endothelium pathologically, leading to an exudation of toxic lymph in the surrounding nerve tissues. He points out the abrupt demarcation which is so often present between a diseased patch and the adjacent healthy structures, and considers this highly suggestive of a physical condition determining the shape and margin of the pre-supposed toxic fluid.

Another theory as to the pathogenesis of disseminated sclerosis is proposed by Shoyer,² who suggests that the distribution of the lesions may be due to a poisonous agent conveyed by the cerebro-spinal fluid, which finds entry along the fissures, from

the central canal and ventricles, and along the nerve roots, also at a point in each lateral margin of the cord.

REFERENCES.—¹*Med. Chron.* Jan. 1903; ²*Jour. Path. and Bact.* p. 124, 1902.

SCURVY.

T. N. Kelynack, M.D., M.R.C.P.

The subject of scurvy has recently been thoroughly discussed.¹ The view now prevailing seems to be that lime-juice is not absolutely necessary as an anti-scorbutic agent in naval and military life, provided that fresh meat and fresh fruit and vegetables in sufficient quantities are available. The scorbutic conditions arising in children are certainly usually due to the absence or deficiency of fresh milk of proper quality.

REFERENCE.—¹*Brit. Med. Jour.* Oct. 4, 1902.

SCURVY, (Infantile.)

G. F. Still, M.D.

Although numerous cases are being reported from all quarters, little if anything has been added to our knowledge of this disease since it was originally described by Barlow and Cheadle. J. A. Coutts¹ points out that while pronounced and unmistakable scurvy is admittedly rare, there are milder grades in which the infant becomes merely peevish or fretful, and these less obvious cases must be taken into account in considering the advisability of using *boiled or sterilised milk*, which is certainly responsible for some of these milder scorbutic conditions in infants. This opinion the present writer² entirely endorses, and has indeed expressed in very similar terms.

"Infants come under notice every now and then who have been fed continuously on milk which has been boiled for fifteen minutes or perhaps longer; they show no evidence whatever of pronounced scurvy, but they are "not getting on," they are peevish and miserable, their skin instead of showing a clear healthy colour, shows an earthy pallor only less marked than the anæmia of scurvy; there is in fact a cachexia, which is hardly defined enough to be called scurvy, but may well be the vanishing point of scurvy; and this appears to be due in some cases to overboiled milk, but much more often to sterilisation."

As to the actual cause of scurvy we are still in the dark. Various untenable theories have recently been put forward. W. B. Ransom³ supports the view that scurvy is the result of ptomaine poisoning from decomposition in milk that has been kept too long. Kellett Smith⁴ suggests that deficiency of fat in the food is the *causa malorum*. The unfortunate name "scurvy rickets"

is still giving rise to mistaken ideas of its relation to rickets ; Ausset⁵ resuscitates the view that infantile scurvy is a hæmorrhagic variety of rickets, in spite of such a series of cases as that recently published by Thiercelin,⁶ of whose five cases not one showed any signs of rickets.

All that is certain as to its etiology is that, as Tullis stated⁷ in a recent paper, the cause of infantile scurvy is improper diet, particularly the proprietary foods and condensed milk. Humanised, sterilised, and peptonised milk are also responsible for a certain number of the cases. In other words, absence of fresh food would seem to be the chief factor in nearly all cases ; and no doubt is also the cause of those rarer cases of scurvy in later childhood, an instance of which in a boy of 5½ years, has recently been described by Carpenter.⁸ This child "would not touch gravy or meat-juice. Vegetables he always refused—they made him sick—and he had never eaten fruit of any kind."

TREATMENT.—The value of **Unboiled Milk** not only in the prevention of scurvy, but also in its cure, has long been recognised. J. Sutherland⁹ refers to cases which he has treated with this alone (excepting small doses of **Morphia** to relieve pain), and Bolle¹⁰ also emphasises its value. But most writers recommend the use of **Orange** or **Grape Juice** ; and **Raw Meat Juice** is also generally given. In a case in which hæmatemesis and melæna were the prominent symptoms, J. McCaw¹¹ found the application of an icebag to the epigastrium useful.

REFERENCES.—¹*Brit. Med. Jour.* Nov. 15, 1902 ; ²*Ency. Med. Art.* "Infant feeding" ; ³*Brit. Med. Jour.* Feb. 22, 1902 ; ⁴*Lancet*, Feb. 7, 1903 ; ⁵*L' Echo Méd. du Nord.* in *Arch. Ped.* May, 1903 ; ⁶*La Presse Méd.* in *Arch. Ped.* March, 1903 ; ⁷*Brit. Med. Jour.* Jan. 10, 1903 ; ⁸*Lancet*, May 3, 1902 ; ⁹*Lancet*, May 31, 1902 ; ¹⁰*Zeit. f. diæt. u. physik. Therap.* in *Brit. Med. Jour.* Oct. 21, 1902 ; ¹¹*Brit. Med. Jour.* Nov. 27, 1902.

SEA-SICKNESS.

Purves Stewart, M.A., M.D

No infallible remedy has yet been found which will cure the distressing form of cerebral vomiting known as sea-sickness. Various devices have been suggested in addition to the innumerable "cures" already known. Amongst the most recent of these may be mentioned repeated deep **Inspirations** taken in the hope of inducing a condition of partial apnœa, and thereby lessening the excitability both of the respiratory centre and of the neighbouring vomiting centre. Castelli¹ quotes a letter from the Italian ambassador to the United States, in which that gentleman (presumably a layman) relieved his sea-

sickness by fixing his gaze upon a mirror when dressing. Such mechanical devices, however, are inferior to the more scientific procedure of a recumbent posture and a cerebral sedative, such, for example, as **Bromide and Chloral** mixture, or **Chlorobrom**, which contains in addition a certain amount of **Cannabis Indica**. Previous attention to the intestinal tract, by administration of a purgative and the avoidance of indigestible articles of food, is a valuable adjuvant. Wild² recommends **Tannate of Orexin** as a preventive. The patient is ordered to take a full meal five hours before starting on his voyage, and two hours after the meal $7\frac{1}{2}$ grs. of the drug in half a pint of fluid, which may be milk, tea, or broth. He quotes five successful cases treated in this way. In one case, however, the patient felt exceedingly ill next day, a result attributed by Wild to his having taken insufficient food at the preliminary meal. Good results are also recorded by Wheeler³ and by Fawcitt⁴ from the administration of **Chloretone** in 5-grain doses, at intervals of three or four hours, commencing with a 10-grain dose.

REFERENCES.—¹*Med. Rec.* Oct. 11, 1902; ²*Brit. Med. Jour.* Dec. 27, 1902; ³*Lancet*, Feb. 28, 1903; ⁴*Ibid*, March 7, 1903.

SEBORRHOEA.

Norman Walker, M.D.

Shoemaker¹ urges the importance of attending to any anæmia, or digestive or sexual derangements, which are present. Locally he recommends galvanism, and bathing of the face every night with water as hot as can be borne, also the following ointment may be used:—

R Salicylic Acid	grs. xx	Zinc Ointment	℥ss
Eucalyptus Oil	℥v	Ointment of Roses	℥ss
Chloral Hydrate	grs. x		

The salicylic acid to be increased to 1 drachm, and the eucalyptus oil to 15 minims.

For dandruff the following ointment has been recommended:²

R Red Precipitate Ointment	℥iv	Oil of Bergamot	2 drops
Benzoated Lard	℥jss		

REFERENCES.—¹*Med. Bull.* Nov. 1902; ²*New York Med. Jour.* Feb. 7, 1903.

SEPTICÆMIA.

Robt. Hutchison, M.D.

The treatment of septicæmia in any one of its forms must still be regarded as unsatisfactory. The percentage of fatalities is enormous, and the total death-roll from this cause alone very considerable. Modern pathology has lessened the incidence of

such cases in no small degree by a knowledge of its causes. The discovery of the pus-producing micro-organisms, the adoption of antiseptics, and the methods of modern surgery in early diagnosis and prompt evacuation of purulent collections, have been of inestimable value. But septicæmia still occurs, if less often, and for a certain remedy medicine still seeks. Cases undoubtedly do recover, sometimes with, occasionally without, and perhaps occasionally in spite of treatment. The natural protective arrangements in the body and especially in the blood against invasion by pathogenic organisms are elaborate; modern bacteriology reveals these intricate processes year by year. With further knowledge of bacteria and their toxins, came fuller attempts in the same direction. Serum therapy was born, and still thrives. But the great host of organisms, each of which may cause septicæmia and requires a separate anti-serum for its cure, makes progress slow if sure. Many attempts have been made on the fascinating lines of intra-venous injection, and the present year has not been inactive in this direction.

Barrows¹ reports a case of puerperal septicæmia in a negress, who recovered after intravenous infusion of a solution of **Formaldehyde**. Streptococci were present in her blood. The patient is stated to have developed a rigor, followed by persisting pyrexia one day after the delivery of a decomposing six months fœtus. Intra-uterine douches of perchloride of mercury, irrigation of hydrogen peroxide, and curetting were all carried out, but five days after delivery her temperature was 108°, pulse 150, and she was apparently moribund. She was given an intravenous injection of 500 c.c. of a 1 in 5000 aqueous solution of **Formalin**, and another injection of 750 c.c. of a similar solution was given some 36 hours later. The patient progressively improved, and eventually made a complete recovery. Barrows quotes experiments on rabbits to show that no morphological changes were produced on the red blood cells by such injections, as well as Maguire's experiments² on animals, patients, and himself. He concludes that these experiments show that such solutions can be employed with perfect safety to the patient, and maintains that serum-therapy in acute streptococcic infection of the blood has been an absolute failure, but that intravenous infusion of **Formalin** in such cases holds out a fair hope of success. He warns the profession against its indiscriminate use where blood cultures have not been made, and presupposes the proper adoption of all surgical measures which may be indicated in each individual case.

Bance³ reported a case of a woman of forty-two, suffering from apparent pyæmia with streptocci in pure culture in the blood, in whom formalin intravenous injections were tried without result, and the patient died. He did not consider that in his case this treatment had exerted any special influence for good or evil.

Snodgrass and Elbrecht⁴ record the results of some experiments made on rabbits inoculated with the streptococcus, into which they injected formalin solutions in quantity proportionate to that employed in New York in the case quoted above. It is a noteworthy fact that cultures from the heart blood of all the rabbits gave pure cultures of streptococci, even when injections of formalin were used. They state that from their results they do not feel justified in drawing conclusions which would recommend or condemn the formalin treatment of septicæmia, and they also conclude that formalin is slow to act, because it requires over an hour for a 1-500 solution to kill the organisms, whereas 1 to 1000 required over four hours, and therefore the direct action of formalin in its dilute solutions must be extremely mild.

Bauer⁵ refers to a case of ulcerative endocarditis in which the intravenous injections of formalin were tried. The patient was suffering from the characteristic symptoms and physical signs of septic endocarditis, and the blood cultures showed streptococci in great numbers and pure culture. An intravenous injection of 675 cubic centimetres of a 1 in 5000 formalin was given. A second injection was given, fifty-two hours later, of 600 cubic centimetres of a 1 in 3000 solution. No beneficial result was noticed clinically, and further blood cultures showed no decrease in the number of micro-organisms. He reviews the various cases of this treatment so far recorded in the literature, as well as the laboratory work done in the same direction. He concludes that it seems improbable that formalin used intravenously has a specific value in septicæmia, and suggests that the apparent good which may have followed from its use has been in all probability due to the beneficial result of the saline fluid used, which must dilute the toxins.

Ewart⁶ considers that the inefficacy of our antiseptics of the present day, used in the shape of intravenous injections for direct germicidal purposes, has been conclusively demonstrated. He considers, however, that intravenous medication is a distinct and much wider subject, to which it may be premature to apply the same sweeping conclusions.

Fortescue Brickdale⁷ reviews the whole question of intra-vascular antiseptis in an able article, both from a clinical and experimental point of view ; he gives a summary of its present position. He details his own recent experiments in testing the toxicity of various antiseptics when injected into the veins of rabbits, and his inquiry as to whether any of these exerted an influence on the course of an artificially produced septicæmia. As the result of his work he concludes that at present there is no experimental evidence which would warrant the assumption that the course of a septicæmia in animals can be influenced favourably by the intravenous injection of antiseptic substances, and that the only result to be obtained by pressing such a treatment beyond the maximum non-toxic dose is to hasten the death of the animal. In view of the results described in this paper, and those obtained by former investigators, it seems useless to continue to apply clinically a method which, while by no means free from special dangers and difficulties, is at present unsupported by any experimental evidence either as to its present advantages or future prospects.

Vernitz⁸ recommends repeated **Rectal Injections** of a 1 per cent solution of **Common Salt** in water. He has tried similar injections given intravenously, but considers the strain on the weakened heart was too great. He describes the method he finds most convenient, and maintains that the effects are soon apparent in the general condition of the patient ; this improvement is specially noteworthy in cases in which there has been peritonitis. The method he considers simple, harmless, and agreeable to the patient. It is applicable not only in septicæmia, but also in the various infectious diseases, and in such toxic conditions as eclampsia and uræmia.

REFERENCES.—¹*New York Med. Jour.* Jan. 31, 1903 ; ²*Prognosis and Treatment of Pulmonary Tuberculosis, Lancet*, Dec. 1900 ; ³*New York Med. Jour.* Jan. 24, 1903 ; ⁴*St. Louis Med. Rev.* Jan. 31, 1903 ; ⁵*New York Med. Jour.* March 2, 1903 ; ⁶*Lancet*, Jan. 17, 1903 ; ⁷*Ibid*, Jan. 10, 1903 ; ⁸*Roussky Vratsh*, Sept. 14, 1902.

SEPTICÆMIA, (Dento-buccal Origin of). J. G. Turner, F.R.C.S.

Julien and Camille Tellier¹ give details of cases of dental origin showing that every variety and every degree of severity of septicæmia may be met with as the result of dento-buccal infection. They group the cases under six headings : (1) Chronic septicæmia ending in buccal or dental cachexia ; (2) Acute generalised septicæmia ; (3) Acute lymphatic septicæmia ;

(4) Vascular (venous) septicæmia ; (5) Septico-pyæmia ; (6) True pyæmia, purulent infection with metastatic abscesses.

They say, justly, the prognosis of any one of these forms is always grave, and death is the ordinary termination. Sometimes the progress of the disease is slow enough for active remedial measures to have some chance of success, but the practical conclusion to be drawn is that buccal infections, however light, or however chronic, must never be viewed with the indifference which many doctors and dentists manifest towards them. Doubtless actual generalised infection as a result of pyorrhœa alveolaris is very rare indeed, having regard to the great number of individuals infected with this disease. But, if often this affection is due to local causes, often also it is an index of weakness of the whole organism ; nearly always it is accompanied by some organic trouble, passing or permanent, and they strongly urge that no lesion of the gingivo-dental region can be safely neglected.

The authors specially call attention to the cases of chronic septicæmia, which they think are far more common than is generally recognized. In such cases careful and prolonged oral antiseptics must be practised before extraction is performed, immediate operation being liable to be followed by an attack of acute septicæmia due to auto-infection of the operation wound. Another danger of these cases is syncope as a result of infective accidents of buccal origin. The authors claim to have known several cases of sudden death from syncope in these cases, and cite one in which a patient suffering from necrosis as a result of an abscess due to a dead mandibular third molar, died in ten minutes after walking back to bed from her bath.

Mr. Edmund W. Roughton² records some interesting cases of this class. In discussing their treatment, he says when pus burrows into the neck free incisions should be made. Should the occurrence of rigors and other symptoms indicate the onset of pyæmia, the question of excising the veins leading from the infected area or ligaturing the internal and external jugular veins must be considered. Acting on the same principles which guide us in cases of infective thrombosis of the sigmoid sinus, Arbuthnot Lane has excised the infected veins in a case of pyæmia secondary to alveolar abscess, but without success.

J. A. Hoffeimer³ records a case of generalised pyæmia in a boy consequent on fracture of the mandible in extraction of a

molar. The boy recovered, with loss of the right half of the mandible from necrosis.

Asepsis in Tooth-extraction.—As in any surgical operation, the instruments, the hands and nails, and the field of operation should be clean. Forceps may be boiled, and hands cleaned as for any other operative procedure. The tooth and its surroundings demand more particular attention. The patient should wash his mouth out with a solution of hyd. perchlor. 1-3000, or with :—

R Acid Carbol.	grs. x		Aq.	3j
Sod. Bic.	grs. x			

Then the tooth and its neighbours should be well rubbed with a pledget of cotton-wool dipped in a strong solution of carbolic acid and sod. bicarb, taking special care to clean all round the neck of the tooth to be extracted. Just before using the forceps, especially in any septic case, dip the blades in a strong carbolic acid solution; in this way if any dirt is pushed up into the tissues by the blades of the forceps it is accompanied by some antiseptic. After the extraction syringe the socket and again clean the neighbouring teeth. In an ordinary clean mouth these precautions will suffice, but where there is danger of septic infection the patient must be made to return each day for a week to get the socket syringed, especially in the case of a lower tooth. In this syringing the nozzle of the syringe must be thrust *right down to the bottom of the socket*.

REFERENCES.—¹*Lyon Méd.* Feb. 8 and 15, 1903; ²*Lancet*, Oct. 25; 1902; ³*New York Med. Jour.* Feb. 21, 1903.

SEROSITIS, MULTIPLE. (See "Perihepatitis.")

SKIN GRAFTING.

Priestley Leech, M.D., F.R.C.S.

Dr. McChesney¹ publishes a case where he tried a somewhat novel method of skin grafting. The area to be grafted, which was granulating from a burn, was cleaned with Thiersch solution, and then irrigated with normal salt solution. The granulating surface was then dried with sterile gauze sponges; where the granulations were firm the grafts were placed directly on them; where they were exuberant they were cut down and gently compressed with sterile gauze until the bleeding had stopped. Some of the granulations were very soft and flabby, and these were scraped away until a firm, fibrous foundation was reached. The thin, blue line of epithelial cells that had started to creep in along the edge of the wound was dissected up, and small pieces

about an eighth of an inch square were cut off and placed on the granulating surface already prepared. These grafts were placed with the raw surface against the newly-prepared surface, and covered with pieces of oiled silk protective about an inch square, and the leg put on a Volkmann's splint.

The patient experiences very little discomfort while the epithelial line is being raised and cut off. It does not disfigure or scar, and at each dressing several new islands can be started without discomfort to the patient. These newly-developing epithelial cells are very active in their growth, and the grafts take very well.

REFERENCE.—¹*Med. Rec.* June 18, 1903.

SLEEPING-SICKNESS.

James Cantlie, M.B., F.R.C.S.

In the *Medical Annual* for 1902 an account was given of the spread of sleeping sickness to the district of Uganda and the upper waters of the Nile; and in last year's volume the discovery of the trypanosoma in man was described. During the year 1903 our knowledge of sleeping sickness and of the trypanosoma have both been advanced; and the former may now be considered to be caused by the latter.

Previously regarded as an ailment peculiar to a limited region of the West Coast of Africa, sleeping-sickness, as the interior of Africa came to be opened up, was found existing along the lines of commerce, in countries far inland. Cases of the disease were met with in the Congo basin by Sims,¹ and Cook² saw sleeping-sickness first in February, 1901, in Uganda. So severe an epidemic prevailed in Uganda, attended by so fearful a mortality, that special attention was directed to this district, and a commission was sent out by the Foreign Office and the London School of Tropical Medicine in 1902 to enquire into the spread of sleeping-sickness. To Castellani,³ a member of this commission, is due the credit of discovering the probable cause of the disease, viz., the presence of the trypanosoma in the cerebro-spinal fluid of the sufferers from sleeping-sickness. A further investigation by a subsequent commission sent out by the Royal Society in 1903 confirmed Castellani's discovery, and brought forward proof that the tsetse-fly (*Glossina palpalis*) was the carrier of the disease.

Of the many previous theories suggested as the cause of sleeping-sickness it is unnecessary now to speak in detail. At one time or other it has been considered a peculiar kind of

malaria ; a variety of beri-beri ; a food intoxication ; a form of sun-stroke ; a disease due to *anguillula intestinale*, or to *ankylostoma duodenale* ; to a bacillus which when injected into animals reproduced the disease (Cagigal and Lepierre) ; to Fränkel's diplococcus (Marchoux) ; to a diplo- or strepto-coccus (Broeden) ; to the presence of *filaria perstans* in the blood.

The last-named cause was suggested by Manson, as in all early cases of sleeping-sickness carefully examined the *filaria perstans* had been found ; and when the disease was first reported from Uganda, the advance of the *filaria perstans* was noted to proceed seemingly contemporaneously with it. The assumed connection of sleeping-sickness with the *filaria* was, however, disproved by the investigations of Low and Christy, who went to Uganda along with Castellani. They proved that there were districts where sleeping-sickness occurred in which the filarial worm did not exist.

During the examination of the cerebro-spinal fluid derived from lumbar puncture, Castellani obtained a streptococcus resembling but in some respects differing from the streptococcus pyogenes. Whilst engaged in this investigation, he frequently found trypanosomes in the cerebro-spinal fluid, and he proceeded to further prosecute studies in this direction. His technique⁴ was as follows : "By means of lumbar puncture one drains off at least 15 c.c. of the cerebro-spinal fluid. It is better to reject the first few c.c., as they are apt to contain blood. When the fluid comes away clear, 10 c.c. are collected and centrifuged for fifteen minutes. At the end of this time there is found at the bottom of the tube a slight deposit of whitish sediment, and in some cases also a minute trace of blood. The liquid above the sediment is poured off, and the sediment examined under a moderately low power of the microscope. As the trypanosomes are at first fairly active, they are easily detected." Castellani concluded that trypanosomes in the cerebro-spinal fluid constitute the cause of sleeping-sickness, and that at the same time, in the last stages of the malady, there is frequently found a concomitant streptococcic infection, which appears to play an important part in the course of the disease.

The recent report of Lt.-Colonel David Bruce to the Sleeping Sickness Commission of the Royal Society confirms Castellani's discovery. In addition Bruce made interesting investigations concerning the distribution of the tsetse-fly (*Glossina palpalis*) and the relation of this fly to sleeping-sickness. Bruce has proved that this fly was the carrier of the Nagana parasite

(*Trypanosoma Brucei*) in all countries where Nagana exists. It has also similarly been demonstrated that the Surra trypanosome is carried by the *Tabanus tropicus* and *Tabanus lineola* in India; and that the *mal de caderas* is probably conveyed by the *Stomoxys calcitrans*. Dourine is in all probability also carried by blood-sucking insects. The probability of the ability of the tsetse-fly to carry the trypanosome of sleeping-sickness was anticipated by Sambon, and it may now be said to have been proved by Bruce.

Trypanosomiasis in the European had been considered a disease apart from sleeping-sickness in the negro, although the parasite met with in both appeared identical. This was explained in various ways, some assuming that the ethnical differences between the white and black man accounted for the difference in the behaviour of the infection. The most recent opinion is that trypanosomiasis in the European is but an antecedent stage of sleeping-sickness.

Manson and Daniels⁵ recorded a case of trypanosoma fever in the wife of a missionary from Monsembe, Upper Congo. This lady had been bitten by some insect, presumably a tsetse-fly, so long ago as August 14th, 1901. The bite inflamed, and fourteen days afterwards she had the first of a long series of recurring attacks of fever. A peculiar patchy, ringed, erythematous eruption appeared on the skin, and the liver and spleen became enlarged. In October, 1902, trypanosomes were found in her blood by Daniels. In October, 1903, symptoms of sleeping sickness developed, and these increased until death occurred on November 26th, that is, two years and five months after the presumed date of infection. The macroscopic evidences of sleeping-sickness were present at the necropsy, and the microscopic examinations of brain sections by Drs. Mott and Low⁶ revealed the extensive peri-vascular small mononuclear infiltration so characteristic of sleeping-sickness.

It would seem from these facts, that sleeping-sickness is but an advanced stage of a prolonged trypanosomal infection.

REFERENCES.—¹*Jour. Trop. Med.*, July 15, 1901; ²*Ibid*; *Ibid*, ³June, 1903; ⁴*Ibid*; ⁵*Brit. Med. Jour.*, May 30th, 1903; ⁶*Brit. Med. Jour.*, Dec. 5, 1903, and *Jour. Trop. Med.*, Dec. 15, 1903.

SMALL-POX.

E. W. Goodall, M.D.

Plates XXIII to XXVI represent cases of small-pox. *Plate XXIII* gives front and back views of a girl of nine years suffering from this disease, on the fifth day, when the eruption had been



Fig. 1.—Front view.



Photo. J. Neale.

Fig. 2.—Back view.

SMALL POX.

Eruption 48 hours after its first appearance.

PLATE XXIV.



Photo. J. Neale.

SMALL-POX.
Eighth Day of Eruption.

PLATE XXV.



Photo. J. Neale.

SMALL POX.
Eighth Day of Eruption.



Photo. J. Neale.

SMALL POX.

Eleventh Day of Eruption, showing Pemphigus-like Blebs.

out forty-eight hours. The distribution of the eruption is well shown, even at this early stage; it is most abundant on the face, distal portion of the extremities, especially the hands and wrists, and the back. At this stage it consists of small red papules, which on the face are just becoming vesicular. This patient was sent to the hospital as a case of typhoid fever.

Plates XXIV and XXV also show the distribution of the eruption of small-pox. The photographs were taken on the eighth day of the eruption. It is beginning to dry up on the face, while still in the pustular stage on the lower extremities. *Plate XXVI*, from a photograph taken on the eleventh day of the eruption, shows the pemphigus-like blebs that are not infrequently seen on the legs along with the ordinary poeks.

In *Plate XXIV*, which represents a discrete case, it will be noticed how here and there two or three of the pustules have partly coalesced. These plates should be compared with *Plates XXX to XXXVIII*, which represent chicken-pox. The details of these plates come out better when looked at with an ordinary magnifying glass.

Allan Warner¹ has published an account of small-pox in the foetus. A woman, thirty-five years of age, was admitted to the Leicester Small-pox Hospital on Jan. 11th, with a characteristic small-pox eruption; she had been taken ill on Jan. 8th. She was four months pregnant. The attack was a mild discrete one, and by Feb. 3rd the patient was entirely free from scabs. On Feb. 12th she was about to be discharged from the hospital, when a small superficial abscess was observed in her right breast. In consequence of this she was detained. On the morning of Feb. 15th she miscarried, bringing forth two foetuses, about five months old, with a single placenta. They had probably been dead a few days. "Both of the foetuses were covered with a well-marked eruption, distributed chiefly on the back, the head, and the neck, less on the abdomen and the limbs, and there were two spots on the sole of one foot. The eruption consisted of yellow circular patches with a central depression, the size of the majority of the patches being equal to the thirty-second part of a square inch." Dr. Warner makes the following observation. "A point of considerable interest in this case is that had the patient been discharged as free from infection on Feb. 12th, her subsequent miscarriage might have been a source of infection to anyone attending her. This would there-

fore tend to show that special caution should be exercised in discharging pregnant women from a small-pox hospital."

Thomson and Brownlee² give a long and detailed account of twelve cases of smallpox treated with the serum of heifers immunised to vaccinia. The average dose was 30 ounces given subcutaneously in two injections. Three of the cases were hæmorrhagic and all died; four were confluent, and two died; and five were discrete and all recovered. As far as these cases are concerned, there is no reason to suppose that this treatment was of any beneficial effect. In another case, thought at first to be one of small-pox, but afterwards supposed not to be that disease, a brilliant erythematous rash, probably due to the serum, came out all over the trunk.

Thomson and Brownlee,³ in a "Preliminary note on the parasites of small-pox and chicken-pox," formulate, as a result of five years' study, certain "tentative conclusions," but it does not appear that their observations have really proved that the small bodies they have seen in small-pox and chicken-pox are parasites at all, or that they are even living organisms, so that the title of their paper is somewhat question-begging.

REFERENCES.—¹*Lancet*, July 11, 1903; ²*Ibid.*, April 4, 1903; ³*Brit. Med. Jour.*, Jan. 31, 1903.

SORE-THROAT. (Infectious).

E. W. Goodall, M.D.

Gifford Nash¹ reports an outbreak of septic sore-throat, which occurred at Bedford in June, 1902, and which there was strong [though not absolutely conclusive—E. W. G.] evidence to show was due to milk. From June 7th to July 9th, at least 42 cases occurred in 22 families. Clinically, the cases presented much swelling of the tonsils, palate, and sometimes of the pharynx. Spots and patches of exudation appeared on the fauces, and ulceration not infrequently took place. The glands at the angle of the jaw were sometimes enlarged. The constitutional symptoms were headache, giddiness, pains in the limbs and back, with a temperature of 102° to 105° F. There was marked general weakness, which often lasted for a few weeks.

In every instance the milk was obtained from the same dairy, and Nash states that no case of sore-throat came under his notice during this period amongst persons drinking milk from any other of the numerous dairies supplying milk to his patients. "In some families children who drank boiled milk escaped, whilst parents who consumed unboiled milk or cream were attacked."

Another epidemic of sore-throat, possibly due to milk, was reported at the meeting of the Clinical Society on Nov. 14th, 1902, by W. H. B. Brook.² It occurred at Lincoln during one week in May, 1902. There were upwards of 75 cases. An attack of the disease commenced with erythema of the face and sore throat. The fauces were found to be oedematous, and the tonsils were covered with exudation. A roseolous papular rash occurred in about two-thirds of the cases, coming out on the second day, and lasting from a few hours to a few days. The temperature in the uncomplicated cases was moderately elevated, 99° to 102° F. Albuminuria was rarely present. The most frequent complication was an inflammation of the cervical glands, which sometimes took place at a late stage of the disease. Stiffness of the muscles and joints was met with in several instances, and also arthritis. One case was fatal from septic phlebitis and pyæmia, and another from peritonitis. Nearly all the patients were adults. The most efficacious treatment was found to be: **Rest** in bed, with milk diet; **Calomel** followed by a saline aperient at the onset of the disease; **Salicylate of Sodium** during the acute stage, and **Quinine** during convalescence. The local treatment consisted of the application of **Nitrate of Silver** to the fauces, and the frequent use of a **Gargle** containing carbolic acid and borax.

REFERENCES.—¹*Lancet*, Oct. 18, 1902; ²*Chn. Soc. Trans.*, vol. xxxvi, p. 68.

SPINAL CORD (Surgery of the).

Wm. Thorburn, F.R.C.S.

Collins¹ publishes a careful and elaborate paper upon this subject, pointing out how "tumours of the spinal cord offer a more tempting field for the surgeon than those of the brain." The outlines of the subject are given so tersely that we may quote portions with benefit.

"The symptoms of spinal-cord tumour, named in order of their customary development, are sensory, motor, visceral and trophic, and topical. The sensory symptoms are pain, paræsthesia, and disturbance of pain, temperature, and tactile sensibility of different degrees of intensity. The motor symptoms are spasticity, involuntary twitchings of muscles, and drawing up of the extremities, painful cramp of muscles, paralysis, in the early stages often of a spastic type, but becoming flaccid before the end, and increase of myotatic irritability manifested clinically by exaggerated tendon jerks, involuntary clonus of the foot (spinal epilepsy), etc. The visceral symptoms are referable

principally to the bladder, and depend upon the level of the cord implicated. If the tumour is of the lumbar or sacral regions of the cord, bladder symptoms usually develop early, and are accompanied by cessation of activity of the lower bowel. When the tumour is above the lumbar region, voluntary control of the bladder is lost as soon as a certain degree of cord compression has been reached; the rectal sphincter remains subservient to voluntary control in these cases longer than the vesical, but eventually it acts automatically. The trophic symptoms are muscular atrophy and bed-sores. They are both late manifestations. As a rule, in some instances in which a meningeal tumour is situated anteriorly and compresses the ventral part of the cord and the anterior roots, atrophy of the muscles is an early symptom. Bed-sores rarely develop until late in the disease, except in some cases of rapidly growing intramedullary tumours. The topical symptoms are tenderness on pressure over the spinous process beneath which the tumour lies, and some deformity of the spinal column. The first seems to be a fairly constant accompaniment of spinal-cord tumour, the second an inconstant one of little diagnostic importance. In addition to these, there is sometimes stiffness of the spinal column, and often disagreeable sensation in the back when the body is jarred by coughing or sneezing.

Pain is one of the most important symptoms in spinal-cord tumour. In only 10 per cent of the cases is it absent. In upward of 50 per cent it is what is called characteristic, *i.e.*, of a lancinating neuralgic character of some part of the trunk or the extremities. Like neuralgia, it is rarely continuous, but, unlike it, it is not associated with sensitiveness to pressure of the nerve trunks. In the cases he collects from the literature it was absent only five times. Pain in the abdomen caused by intra-spinal tumours is not typical. It is often thought by the patient and physician to be dependent upon some local condition. In his own patient it was diagnosticated as dependent upon appendicitis. Dr. Fränkel's patient had the appendix removed; one of Schultze's cases was treated for gall-stone colic, one of Putnam's for indigestion, and one of Starr's for angina pectoris. A knowledge of this should make us very keen to search out the real cause of abdominal or thoracic pain. Abdominal pain is all the more readily mistaken for some visceral disease, because of its apparent relationship to eating, flatulency, and constipation."

With regard to the difficult point of diagnosis between *intra-medullary* and *extra-medullary growths*, he notes as probable points of distinction the greater pain of extra-medullary growths, the fact that in these pain is often the initial symptom, and the tendency of motor symptoms to be symmetrical in intra-medullary growths only. As regards *localisation*, he finds that there is still—as in the early days of spinal surgery—a tendency to place the site of the tumour too low, and he advises that “the opening should be made over the upper end of the tumour” and prolonged upwards if necessary. The following conclusions are also of value :—

“The most common, as well as the most important tumours of the spinal cord, using the term in its generic sense, are tumours of the meninges, especially tumours of the dura. Those growing within the dura are nearly twice as common as those growing without. Extra-dural tumours may exist for a long time without giving rise to symptoms pointing to implication of the spinal cord, while intra-dural tumours give rise to such symptoms very early. The favourite location for spinal-cord tumour is in the dorsal region, the lower and the upper end. In the seventy cases analysed in this paper, thirty-five were of the dorsal region, fifteen of the cervical, thirteen of the lumbar and sacral, and six of wide-spread distribution.”

Details are given of thirty operations, collected from various sources, and the results include twelve “successful,” eight “partially successful” and ten “wholly unsuccessful.” Four cases died from sepsis and septic meningitis, two from “collapse and exhaustion,” two from “shock and hæmorrhage,” and one from pneumonia. Basing the statement upon the reports of cases operated upon, and those that have come to autopsy without operation, it may be said that 50 per cent of intra-spinal tumours are operable, and of this number one-third to one-half are benefited by operation. Spinal-cord tumours are, therefore, twice as operable as brain tumours, and the results of operation are twice as successful. When the surgeon so perfects his technique that he can perform the operation for spinal-cord tumour without development of sepsis, the percentage of cases benefited by operation will be much greater. For instance, the cases reported by Oppenheim, Starr, and Fränkel recovered from the operation, but they died from sepsis.

Collins' remarks upon the necessity for *early* operation are most important, and in the present reviewer's own experience delay

has militated more than any other avoidable factor against the success of this branch of surgery—as of most others !

“ The urgency in the treatment of these cases is that they be diagnosticated and operated upon early, *i.e.*, before inflammatory œdematous, anæmic, necrotic, or degenerative changes that are irreparable have gone on in the spinal cord. If the operation is delayed until these have occurred, the cord’s activities cannot possibly be restored. Nothing is more pernicious than delay after diagnosis of the tumour has been made. in order that medical treatment may be tried. Gumma of the cord rarely produces the symptom-complex of spinal-cord tumours, and if one should mistake occasionally a gumma for spinal-cord tumour and submit the patient to an operation, nothing possibly can be lost. The degree of recovery after operation will, of course, stand in direct relationship to the condition of the spinal cord, and this agrees rather constantly with the duration and intensity of the symptoms. If paraplegia has existed for several months, for instance, and if trophic symptoms of the skin and muscles have appeared, the surgeon may be able to remove the tumour, but all that can be expected by the patient is that the disease will stop progressing.

“ Examination of the published cases shows that if improvement does not follow soon after the operation, it does not occur to any considerable degree at all. It must be added, however, that in many cases there is *immediately* after the operation an accession of paralytic phenomena not to be attributed to changes produced in the cord by the tumour itself, but secondary to the trauma of the operation. These, as a rule, disappear.”

Collins sums up as follows :—

“ Taking everything into consideration, it may be said that the surgical treatment of spinal-cord tumours offers the most attractive field for surgical interference of all diseases of the nervous system. Still a word must be said about the inadequacy of surgery in these cases. Patients nowadays die from sepsis after the operation about as frequently as they did ten years ago. The operation seems just as prolonged as it did formerly, and the loss of blood is oftentimes very great and in some cases—flat sarcoma—not easily controlled. Until the surgeon overcomes some or all of these conditions, it cannot be admitted that the majority of spinal-cord tumours can be operated upon with prospect of success.”

We have quoted this paper fully, as giving a fair summary of

the present position of the subject ; and may deal briefly with other contributions.

Abbe² records a case of removal of an intra-medullary growth (sarcoma) in which the patient made a good recovery but gained little *quoad sanitatem* ; this is probably the first case in which a tumour has been " successfully removed from within the cord."

Schultze³ (quoted from Collins *supra*) has recently given a synopsis of eight cases of spinal-cord tumour. In two the diagnosis was erroneous ; in the other six, all of which were operated upon, three recovered, two completely, and one partially. In two death followed the operation. In one of the cases in which death resulted, there was a large tumour at the level of the cauda equina ; in the second there was annular tumorous thickening of the dura, which could not be removed.

In conjunction with Gardner the present reviewer⁴ describes a case in which he removed a sarcoma of the axis, with temporary improvement in the spinal cord symptoms. The latter were of interest on account of their extensive distribution, as paralysis extended certainly to the left phrenic and possibly to its right fellow, while anæsthesia reached to a higher level than any hitherto described in pressure lesions of the spinal cord, and appeared to indicate that the upper level of the distribution of the third cervical root extends almost circularly from the spine of the axis to the hyoid bone.

Tytler and Williamson⁵ record a successful case of removal of an extra-dural hydatid of the spinal canal, and Williamson in another article (*Medical Chronicle*, Sept., 1902) discusses carefully the results of operative treatment of spinal tumours. He finds records of 54 operations, of which 28 have been successful, but rightly points out that the cases of failure are probably far more numerous than would appear from these figures. " It may be pointed out that the cases likely to be benefited will be very few, since spinal tumour is a rare disease, and only tumours of certain forms and in certain situations are likely to be removed with permanently successful results." Among the most favourable cases are hydatids ; but here, as in other cases, operation must be performed early, and prior to the development of marked degeneration. In quoting Williamson's figures, we have included the successful case of Henschen and Lennander⁶ referred to in his appendix, and worthy of notice from the carefulness and completeness of the record and commentary.

With regard to *tuberculous disease* of the spine, and to the

treatment of *injuries*, there is nothing worthy of special note in the work of the last twelve months.

Stewart⁷ records the case of a woman shot through the spinal cord at the level of the seventh dorsal vertebra; the ends of the cord were three quarters of an inch apart, and the bullet and a piece of bone lay between them. The latter having been removed, the cord was sutured with three catgut sutures, and partial recovery of sensation and motion ensued. The possible fallacies of such an observation are obvious, and until it is confirmed, it cannot be regarded as proving that the cord is capable of repair after complete section.

REFEERNCES.—¹*Med Rec.* Dec. 6, 1902; ²*Jour. Nerv. and Ment. Dis.* p. 281, 1902; ³*Versamml. Sudwest Deut. Neurol.* May, 1902; ⁴*Brain.* p. 120, 1903; ⁵*Brit. Med. Jour.* vol. i, p. 301, 1903; ⁶*Mitth. aus d. Grenz. der Med. u. Chir.* p. 673 1902; ⁷*Phil. Med. Jour.* June, 1902.

SPINE, Typhoid. (See "Typhoid Spine.")

SPLEEN, (Surgery of).

A. W. Mayo Robson, F.R.C.S.

The surgery of the spleen has not received the same attention as other organs, prejudice being thrown upon it on account of failures, but recent work in that direction has been better. The spleen can be removed with just as good results as the uterus, ovaries, or kidneys.

T. A. Ashby¹ reports a case of wandering spleen impacted in the pelvis and complicated by typhoid fever, in which he successfully performed splenectomy.

Hæmorrhagic Cyst of the Spleen.—Ettore Siuliano² reports a case of hæmorrhagic cyst of the spleen—a condition which has been described in very few cases, and is therefore very rare indeed. The ideal treatment is puncture, but in some cases when this fails, the spleen must be explored and the cavity emptied and sewed to the parietes and drained. Splenectomy is unjustifiable.

Hydatid Cysts of the Spleen.—Dr. Miceli Gapurbano³ had a patient, a woman aged sixty years, who showed a tumour in the left flank that reached almost to the iliac crest, was fluctuating, and movable from side to side. An exploratory puncture showed the presence of a watery fluid, which did not contain the parasites, but which had all the characteristics of echinococcus fluid. The cyst was situated in the spleen, as an examination of the surrounding organs excluded the presence of echinococci elsewhere. The noteworthy fact in this case was that after the exploratory puncture, the cyst gradually disappeared, so that six months later no trace of it was left.

Wandering Spleen.—Peterson⁴ reports a case of successful splenoplexy for this condition in an enormously fat woman, aged thirty-nine. Mr. J. B. Hall⁵ reported a case of successful splenoplexy for the same condition. He referred to 8 other cases in which the operation had been done by various operators.

Splenic Abscess.—Dr. G. Riolo⁶ has reported a successful case of incision and drainage, and calls attention to the fact that in splenic abscess with malaria, quinine elevates the fever instead of lowering it. He explains this by the fact that quinine contracts the spleen, and propels into the general circulation a larger amount of septic material after each dose.

Some time ago, I had a case of splenic abscess successfully operated on by incision and drainage, and the patient left the hospital quite well except for a small sinus, which some time later was dilated and irrigated at another hospital with unfortunate results, which demonstrated the danger of forcibly distending such a fistula.

A valuable paper on splenic infection, with a report of two successful operations, is given by Dr. A. L. Staveley,⁷ and in it a careful description of blood examination before and after.

Rupture of the Spleen.—The spleen is one of the most friable of the abdominal viscera, and all forms of external violence are prone to produce laceration of its substance. Falls are, as would be expected, especially likely to cause lesion, and the falls need not be from any great height. In one case a man fell about seven feet on to his left side on an iron girder, and an extensive rupture of the spleen was produced, while Pellercaux has described a laceration of the spleen resulting from a mere down-slip while walking in the street. Edler found in 160 cases 51·8 per cent were due to external violence without local signs, 26·2 per cent were gunshot wounds, and 21·8 per cent were stab wounds. In 292 cases of injuries of varying degrees of severity of the abdominal viscera, Makins found 89 cases of rupture of the viscera. The largest number were those of the kidney (39 per cent); next were those of the liver (23·50 per cent), and third, those of the spleen.

The symptoms to which laceration of the spleen gives rise are those of internal hæmorrhage, but the rapidity of the onset of the symptoms varies greatly in different cases. In some instances death appears to have resulted within five minutes, while in others days have elapsed between the onset of the symptoms and the fatal ending.

As to the treatment of ruptured spleen, when the diagnosis has been made there cannot be two opinions; immediate operation is indicated. The best incision for removal of a ruptured spleen is in the left semilunar line, commencing at the edge of the ribs: its length must depend on the size of the spleen, but in cases where the viscus is normal in size four inches should be sufficient.

Eisendrath⁸ collected 50 cases of laparotomy for rupture of the spleen, of which 28 recovered and 21 died. The prognosis can be greatly improved if the cases are operated upon within six to twelve hours after the injury.

REFERENCES.—¹*New York Med. Jour.*, Nov. 1, 1902; ²*Rif. Med.* Nov. 21, 22, 23; ³*Gaz. deg. Osped. e. del. Clin.*, Feb. 22; ⁴*Amer. Jour. Obst.* March, 1902; ⁵*Ann. Surg.*, April, 1903; ⁶*Rif. Med.*, April 24, 1902; ⁷*Ann. Surg.*, June, 1903; ⁸*Ibid.*, Dec., 1902.

SPLENIC ANÆMIA and BANTI'S DISEASE.

William Murrell, M.D., F.R.C.P.

The terms splenic anæmia, Banti's disease, splenic cachexia, pseudo-leukæmia, lymphadenoma splenicum, and splenomegalie primitive, are usually regarded as synonymous. But on this point there is difference of opinion, for some people doubt the existence of a separate and distinct disease to which the term splenic anæmia can be legitimately applied, whilst others are disinclined to admit that splenic anæmia and Banti's disease are identical. Osler thinks that the existence of a separate malady—anæmia splenica—is still in the tentative or inquisitive stage, and considers that the conditions described as primitive splenomegaly and Banti's disease are respectively the initial and terminal stages of the complaint. Rolleston, however, whilst admitting that the term splenic anæmia has been used very vaguely in clinical medicine to denote the association of anæmia with enlargement of the spleen of undetermined origin, is favourably inclined to the recognition of the disease as a distinct entity. Senator speaks of Banti's disease as anæmia splenica with cirrhosis of the liver. Dreschfeld considers that the splenic anæmia of adults, in which besides anæmia and enlarged spleen there is usually repeated hæmorrhage, is the early stage of Banti's disease, marked enlargement of the liver following later. He apparently regards the addition of fibrosis of the spleen and cirrhosis of the liver as essential to a diagnosis of a case of Banti. Banti, however, in his classical papers, fails to make this distinction, and merely speaks of a notable tumefaction

of the liver and spleen, a tumefaction independent of any preceding morbid condition, and not associated with any leukæmic alteration in the blood. Moreover, in defining the disease, he speaks of it as "anæmia splenica." Although there is this difference of opinion respecting the classification of these forms of disease, it is convenient to consider them collectively under one generic term, and to describe certain features which they have in common both from the clinical and pathological point of view. The amount of material at our disposal for the purpose is limited, for although the disease has of late attracted considerable attention, it is probable that there are not more than sixty published cases all told.

Splenic anæmia is an anæmia progressive in character, uniformly terminating fatally, and associated with enlargement of the spleen, but without leucocytosis or enlargement of the lymphatic glands. There is no known cause; there is no history of syphilis, alcoholism, or malaria. Its precise nature is somewhat of a mystery, and we are in doubt as to whether the anæmia is the result of the enlarged spleen, or whether both are secondary to some cause as yet undetermined. It may be that it is a toxæmia, but if so whether the toxic agent is a product of the hypertrophied spleen, or is introduced from without by way of the intestines, or possibly from the gums or tonsils, is not known.

Dr. James Barr thinks that Banti's disease is due to a vasomotor paresis of the splanchnic area, either in whole or in part, and that this paresis arises from disease of the visceral sympathetic ganglia. As a consequence, there is great enlargement of the abdominal viscera, especially of the spleen and liver, increased hæmolysis, with consequent oligochromæmia and oligocythæmia. The increased blood supply to these organs eventually leads to fibrosis and lessened function. The peritoneal effusion, when present, is due to vascularity rather than portal obstruction. The paresis leads to retention of blood in the portal area with lessened supply to the rest of the body, fall in general blood pressure, with lessened work for the heart, impairment of nutrition, and muscular atrophy. The digestion is weakened, and there is an increase of toxins in the intestinal tract. Dr. Barr's theory is novel and is worthy of attention.

In many cases gastro-intestinal hæmorrhage is the dominant feature, whilst in others it is absent, but whether this can be taken as a basis for sub-division is an open question. Some cases are of many years' duration, whilst others run an extra-

ordinarily rapid course, but whether this constitutes an essential difference is also open to doubt. Whether some of the cases met with in children, in which there is enlargement of the spleen and liver without jaundice, come in this category, is another moot point. Sandwith states that in Egypt the disease is not uncommon in children in whom an alcoholic history can be excluded.

HISTORY.—In 1866 Gretzel¹ described a case of enlargement of the liver with anæmia, to which Griesinger applied the term "anæmia splenica." In 1871 H. C. Wood² published a characteristic case, the spleen being enormously enlarged, and the anæmia extreme, but without any increase in the leucocytes. Woillez³ in 1856 described a case of enlargement of the spleen, with the general symptoms of leucocythæmia, but without any increase in the number of white blood corpuscles. Collin⁴ in 1862 recorded a case which may have been one of splenic anæmia, but was probably an abscess of the spleen. In 1867 Müller⁵ published two undoubted cases. Landouzy⁶ in 1873 published a case in which epistaxis was the prominent feature, and in which an examination of the blood gave 1,000,000 red blood corpuscles per cubic millimetre, the white being to the red in the proportion of 1 to 312. Both liver and spleen were hypertrophied. In 1875 Pye-Smith⁷ read before the Pathological Society of London the notes of a case of enlarged liver and spleen from overgrowth of adenoid tissue without leukæmia. In 1876 Adolf Strümpel,⁸ of Leipsic, published a valuable paper on splenic anæmia, illustrated by a case. Lodi⁹ in 1880 gave details of a case in which the red blood corpuscles numbered 1,820,000 per cubic millimetre, speedily falling to 1,000,000 without any increase in the leucocytes. At the necropsy the spleen was found to be much enlarged, and the liver was hard. Banti¹⁰ (1881-83) recorded three carefully observed cases, in two of which a necropsy was secured. In 1885 P. K. Pell¹¹ published two cases, and other cases were recorded by Potain,¹² Gobain,¹³ Renvers,¹⁴ and Degle.¹⁵ Bruhl¹⁶ in 1891 contributed a valuable article, entitled "De la Splénomégalie Primitive," in which he gave a *résumé* of the literature of the subject. In 1892 Carr¹⁷ read before the Medical Society of London a paper on "Enlargement of the Spleen in Young Children," with an analysis of 30 cases. In 1893 R. T. Williamson,¹⁸ of Manchester recorded two cases, one in a boy, aged nine years, and the other in a man, aged 21 years. The paper is accompanied by illustrations

of the microscopical appearances of the organs. In 1895 Gilbert and Fournier¹⁹ recorded a series of cases in children in which the symptoms were enlargement of the liver and spleen without jaundice. In 1896 S. West²⁰ published a case of splenic anæmia in a man, aged 36 years, with a temperature chart. In 1896 F. Taylor²¹ published a case in a girl, aged 13 years, with a good summary of blood estimates. In 1899 Bertram W. Sippy²² of Chicago published an extremely interesting case, accompanied by excellent illustrations of the post-mortem appearance of the organs. This was followed by an article, by the same writer,²³ containing a critical summary of the literature of the disease, with a copious but incomplete bibliography. In 1900 Osler²⁴ published a series of 15 cases, five of which had been previously reported by him. In seven of these cases hæmorrhage was the feature for which the patient sought relief. In one of the cases the hæmorrhages had recurred over a period of seven years. The average blood count of 14 cases was 3,336,357 red blood corpuscles per cubic millimetre. Ascites was present in only three cases, and cirrhosis of the liver was not always an accompaniment. In the case of a man, aged 33 years, the spleen was removed, and the patient a year later continued well. Two years later Osler published another paper on splenic anæmia, giving a general *resumé* of the whole subject. Cabot of Boston²⁵ gives the results of an examination of the blood in a series of six cases, but without details. His lowest blood count was 384,000, with 1800 leucocytes and 35 per cent of hæmoglobin. In 1900 I published a case²⁶ treated surgically by the establishment of a collateral circulation. The patient died on July 31st, 1901, and at the necropsy it was found that the liver, which weighed 38 ounces, was markedly cirrhotic, the lobules being isolated by strands of connective tissue. This was undoubtedly a case of Banti's disease—the first treated by the Drummond-Morison operation. In November, 1901, Senator²⁷ gave an address on Banti's disease before the Medical Society of Berlin, and pointed out that the tendency to hæmorrhage was especially marked, frequent and severe epistaxis and hæmorrhages from the stomach either ushering in the disease, or appearing later and repeating themselves. In a period of five years he had seen seven such cases, six of them with gastric or intestinal hæmorrhage. Other forms of hæmorrhage were not uncommon, and included bleeding from the gums, hæmoptysis, purpura, and hæmorrhage into the vitreous.

In 1902, I published²⁸ a case of acute Banti's disease which ran a very rapid course, and terminated fatally in a few days. In the same year Shaw,²⁹ of Guy's recorded a case in a child, æt. 10, in which hæmatemesis was a prominent symptom. It is possible that the condition may be hereditary, for in 1890 Claude Wilson³⁰ published some cases of hereditary enlargement of the spleen, and from a subsequent communication by the same author and Douglas Stanley,³¹ there can be but little doubt that some of them were examples of Banti's disease. J. A. Arkwright³² has reported a similar group of cases.

In 1902 Dr. James Barr³³ of Liverpool published three very interesting cases of Banti's disease, with photographs showing the outline of the spleen, and in March, 1903, Dr. J. Michell Clarke,³⁴ of Bristol, recorded a case in a girl of 13, with autopsy.

At the Meeting of the British Medical Association, at Swansea, on July 31st, 1903, an interesting debate on splenic anæmia was opened by H. D. Rolleston.³⁵

GENERAL SYMPTOMS.—The symptoms complained of by the patient are not characteristic, and do not differ from those met with in other varieties of anæmia. There are pallor and loss of strength and energy, and disinclination for mental and physical exertion, with palpitation and shortness of breath, especially on going up stairs. The usual hæmic murmurs are heard. One of my patients, on admission, stated that she had been anæmic for two years, and for eighteen months had been at home doing nothing. For seven months the catamenia had been absent. There was some œdema of the lower extremities, there was no ascites, and there was no leucorrhœa. There was practically nothing in this stage to distinguish it from an ordinary case of oligocythæmia with oligochrômæmia, although subsequently it turned out to be splenic anæmia.

The Blood.—In the early stage there may be nothing characteristic. In the case referred to above the red blood corpuscles, on admission, numbered 3,830,000 per cmm. and the colourless blood corpuscles 3,000 per cmm., chiefly lymphocytes and finely granular oxyphile polynuclear leucocytes. With regard to the erythrocytes, counts of 3,000,000 and less are not uncommon in cases of chlorosis. The leucocytes were certainly low, for in chlorosis they are usually normal in number, an average of 53 observations by Da Costa, junr., giving a little over 7,000 per cmm. At a later stage of the case the red blood corpuscles numbered 2,700,000 per cmm., and the white 3,360, the hæmo-

globin value of the blood being 70 per cent. Even in advanced cases the blood shows no pathognomonic changes, but simply a condition of profound anæmia. In Banti's three cases the erythrocytes numbered 3,999,000, 3,948,000, and 2,851,000 respectively; in a case recorded by Potain they fell to 2,000,000, whilst Taylor's lowest count was 1,370,000. Often there is a relatively high blood count. In six of Osler's cases the corpuscles ranged about 4,000,000, and the average in his seventeen cases was 3,336,357. As the disease advances, there is usually a continuous reduction in the number of red cells. In Taylor's case the erythrocytes fell in six weeks from 3,000,000 to 1,370,000. In one of my cases they fell in eighteen months from 3,830,000 to 2,700,000. Da Costa, junr. finds that counts between 3,000,000 and 4,000,000 are most common. In one of my cases, in which the blood was examined by Dr. Hebb, the erythrocytes were only 362,000 per cmm. Hayem³⁶ considers that a patient is in a very serious condition when the red blood corpuscles approach 1,000,000, and that life cannot be maintained if they fall to 300,000. In some fatal cases of anæmia less than 300,000 have been noted. The lowest count with which I am acquainted is one by Quincke, in which there were only 143,000 per cmm. With regard to the changes in the corpuscles themselves, deformities in shape, especially megalocytosis and poikilocytosis, are common in advanced cases.

Leucopenia is the general rule, but relative lymphocytosis is common. In thirteen recorded cases in which the leucocytes were estimated, there were nine below 5,000. In advanced cases there is often a small number of myelocytes, with a relatively large percentage of mast cells. In a case in which the erythrocytes were 3,000,000, Lazarus Barlow found leucocytes 4,640, consisting of finely granular oxyphile cells 56 per cent, coarsely granular 6 per cent, hyaline cells 20 per cent, and lymphocytes 20 per cent. Many of the hyaline cells and lymphocytes possessed a granular cytoplasm, the granules staining with methylene blue. In the case in which the erythrocytes were 362,000 the leucocytes were 4,375 per cmm.

Another feature of the disease is the relatively low hæmoglobin. Records of 30 per cent and 25 per cent are not uncommon, whilst in one of my cases it was 20 per cent.

In some cases the blood has been examined for organisms, but nothing, either schizomycetic or amoebiform, has been found.

Hæmorrhage is common. It may assume the form of petechiæ, epistaxis, hæmoptysis, hæmaturia, or hæmatemesis with melæna. Of these, epistaxis and gastro-intestinal hæmorrhage are most frequent. Retinal hæmorrhages are sometimes met with. S. West states that "profuse hæmorrhages from any part are uncommon," but this statement does not meet with general acceptance. Osler, for example, records eight cases in which there was hæmatemesis. Senator states that the tendency to hæmorrhage is marked, frequent and severe hæmorrhage from the stomach being common. In six of his seven cases there was gastric or intestinal hæmorrhage, other forms being hæmophysis, purpura, bleeding from the gums, and hæmorrhage into the vitreous. In Michell Clarke's case the patient vomited nearly half a pailful of blood, and eleven hours later a further quantity, though not so much. A few hours before death she brought up five pints of blood. She also suffered from epistaxis. One of my patients died of hæmatemesis, and at the post-mortem examination by Dr. Hebb, there was no trace or indication of ulceration of the stomach, which was most carefully examined. In the case at Guy's Hospital, under the care of L. E. Shaw, hæmatemesis was a prominent symptom; but E. C. Perry, at the autopsy, reported that although the mucous membrane of the stomach was pale, no ulcer or other source of hæmorrhage could be detected. Such cases are not uncommon.

Melanoderma is recorded by various writers, and in some cases the pigmentation has been as marked as in advanced cases of Addison's disease. In some instances the discolouration may be arsenical in origin.

The Spleen and Liver.—The spleen is enlarged and the surface is smooth, but it may be uneven. The anæmia is usually pronounced before the spleen is felt below the margin of the ribs. There may be a tenderness over the spleen from perisplenitis. In one of our cases the splenic dulness extended from the lower margin of the ribs to within two inches of the umbilicus. The liver is often enlarged, reaching a couple of inches or more below the costal arch. Ascites is common, but does not of necessity indicate the existence of cirrhosis of the liver.

The Temperature is often of an irregular hectic type, reaching 103° or 104° in the evening. In one of my cases, which was under observation for some months, there was considerable fluctuation in temperature. On one particular day, which may be taken as a fair example, it was at 3.0 a.m. 100.4° , at

7.0 a.m. $102^{\circ}8'$, at 11.0 a.m. $100^{\circ}8'$, at 3.0 p.m. $103^{\circ}0'$, at 7.0 p.m. $102^{\circ}8'$, and at 11.0 p.m. $103^{\circ}2'$. In the early stages the temperature may be normal or but slightly elevated, whilst in the late stages it is commonly high.

Morbid Anatomy.—In splenic anæmia, the spleen may weigh from 2 to 5 lbs. or more. In Bovaird's case it weighed $12\frac{1}{2}$ lbs., whilst the average in 13 cases gave 58 ozs. Sippy gives a good account of the morbid changes met with in this organ, with illustrations of the post-mortem appearances. In one of my cases the spleen was enlarged, deep red in colour, especially at the upper part, where there was a wedge-shaped patch, deeply congested, resembling an infarct. In another case in which the spleen weighed only nine ounces, it was dark red, beefy, and homogeneous. Localised thickening of the capsule is common, and as a rule there is fibrosis of the organ, with disappearance of the pulp, and atrophy of the Malpighian bodies. Senator finds that the liver shows changes of three kinds: (1) Small collections of round cells like lymphocytes—metastatic lymphomata; (2) Collections of large endothelial cells similar to those in the bone marrow and spleen; (3) Cirrhosis, sclerosis intima of the splenic and portal vein, often due to syphilis, especially inherited syphilis. In some cases it is secondary to a result of the splenic changes. The liver is usually much pigmented. Dr. Bertram Abrahams found great excess of interlobular connective tissue with diminution of liver substance. In the connective tissue were numerous ducts, some lined with columnar, and others with cubical epithelium, the latter predominating. There was some small round cell infiltration of the lobules, but no fatty degeneration.

The bone marrow has been examined, but nothing characteristic has been found.

DIAGNOSIS.—Many cases of Banti's disease are mistaken for ordinary chlorosis, and the error from the point of view of prognosis is serious. A careful examination of the abdomen, with a blood count, would clear up the difficulty. When hæmatemesis is the chief symptom, the case may be mistaken for one of gastric ulcer. The elevation of temperature may lead to an erroneous diagnosis of *ulcus carcinomatosum*. In one of my cases of *ulcus carcinomatosum*³⁷ of the pylorus, in a woman æt. 35, the temperature, which had been previously normal, suddenly rose to $104^{\circ}6'$, and the pulse to 136. In the muscular weakness and absence of emaciation, splenic anæmia

resembles pernicious anæmia, but is distinguished from it by the size of the spleen, and the examination of the blood. From splenic leukæmia, especially those cases in which the leucocytes gradually diminish in number and remain at the normal for protracted intervals, the differential diagnosis is not easy; but if an opportunity of watching the patient is afforded, the difficulty is overcome. From Hodgkin's disease, with enlargement of the spleen, the enlargement of the glands, with the comparatively slight increase in the size of the spleen, affords a ready mode of distinction. From cirrhosis of the liver, with enlargement of the spleen, the history and the blood count will suffice.

PROGNOSIS.—Our knowledge of the life history of these cases is imperfect. Many of these patients ran a chronic course, far more than the two years which until recently was supposed to be the maximum duration. Trevor mentions a case of twelve years' duration, and in Gaucher's case the enlarged spleen had existed for twenty-five years. Osler thinks that the protracted course of the disease is one of its peculiarities. On the other hand, these cases sometimes run a very acute course. One of my patients, a woman *æt.* 31, in whom there was profuse hæmatemesis, was admitted on January 16th, and died on January 29th, although she was apparently perfectly well three days before being brought to the Hospital. On admission the patient was profoundly anæmic, the temperature ranged from 101° to 102.4° F., the pulse was 156, weak and thready, and the tongue was pale and flabby. She complained of nausea, but had no pain after food and did not vomit. There was no thickening about the pylorus, the stomach was not distended, and no tender spot could be detected. The liver was not enlarged, but the spleen could be felt. The heart and respiratory sounds were normal, and there was nothing indicative of phthisis. She was not suffering from hæmorrhoids, and she stated that she was regular. The motions for two days after admission were dark in colour from altered blood. There was no albumin or sugar in the urine. It was regarded as an ordinary case of hæmatemesis from gastric ulcer. She was kept in the recumbent position, and was fed at first by the rectum, and subsequently with small quantities of milk and beef-tea by the mouth. The patient showed no signs of improvement, and in spite of the administration of strychnine and digitalis the pulse remained at 140 and was very feeble in character. The respirations were

at times so rapid that they were counted with difficulty. Transfusion was performed, but the temperature rose to 104.4°, and the patient died.

H. P. Hawkins and C. G. Seligmann³⁸ have recorded a case of acute splenic anæmia which terminated fatally with general bacterial infection, after an illness of from two to three months duration.

TREATMENT.—It must be admitted that the purely medical treatment of splenic anæmia is not satisfactory. Iron does no good, whilst arsenic, even in large doses, usually fails to arrest the progress of the disease. In collapse from hæmorrhage **Transfusion** may prove useful. In an acute case, Dr. Nimmo Watson, of Harrogate, transfused two pints of saline fluid containing one drachm of chloride of sodium, 4 grains of bicarbonate of sodium, 3 grains of chloride of calcium, and 1 grain of chloride of potassium to the pint.

Dr. Barr advocates the use of measures which raise the general blood pressure, improve the nutrition, and keep the intestinal tract antiseptic. He gives **Strychnine**, **Digitalis**, **Quinine**, and **Caffeine**, and finds **Salol** and **Benzo-naphthol** useful. He speaks well of **Perchloride of Iron** with **Chloride of Calcium** as a good hæmatinic and for lessening the liability to hæmorrhage. He finds the following jelly a convenient mode of administering chloride of calcium: 1 ounce of gelatin, the juice of 1 lemon, from 2 to 4 drachms of chloride of calcium, in a pint of hot water.

Splenectomy is often successful, if not in curing the disease, at all events in prolonging life. This operation has been performed a great number of times, not as a rule for splenic anæmia, but in hypertrophied spleen connected with malaria, and in cases of rupture of that viscus. In this connection it is important to diagnose accurately between splenic anæmia and leucocythæmia. Splenic anæmia is the only form of anæmia in which extirpation of the spleen is likely to prove successful. It has been abandoned in leucocythæmia, from the uncontrollable hæmorrhage which ensues. In 25 cases of leucocythæmia in which it was attempted, there were 24 deaths, whilst in 75 non-leucocythæmic cases there were only 28 deaths. When there is ascites, the establishment of a direct communication is a preferable mode of procedure. This operation in a case of splenic anæmia was performed for the first time by Mr. Walter Spencer³⁹ on Feb. 20th, 1900, and the patient's life was prolonged

for six months, during the greater part of which she was able to follow her usual avocations. In 1902, Bendetto Schiassi, of Bologna, reported a case of Banti's disease operated on in the Ospedale Umberto e Margarita, in Budrio, in which, paracentesis having been first performed, the omentum was grafted between the muscles and the peritoneum. The ascites soon returned, and the spleen at a second operation was fastened to the parietal peritoneum. **Hepatic Extract** and **Fresh Red Bone-marrow** were administered, and the patient made a good recovery.

J. Tansini⁴⁰ reports a case of Banti's disease in which he performed both splenectomy and the Talma or Drummond-Morison operation. The patient was a woman, æt. 24, who showed enlargement of the spleen with cirrhosis of the liver, accompanied by ascites and cachexia. The ascites produced so much discomfort as to render life insupportable, and paracentesis proved useless. The excised spleen weighed 1300 grammes, and on microscopical examination showed a thickened capsule, an increased amount of connective tissue, and sclerosis of the Malpighian corpuscles. The patient made a good recovery, and there was no return of the ascites.

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STOMACH, (Surgery of).*A. W. Mayo Robson, F.R.C.S.*

The way to success in gastric operations has been paved with many failures, and only recently has the surgeon been able to show what can be done in this branch of work. For instance, when gastrotomy was first performed by Sedillot and those who followed him, it was nearly always fatal, the chief reason being that the patients were never handed over to the surgeon until nearly moribund; of such were my first 8 cases, of which 6 died. Even up to 1890 the mortality was so great that the operation was seldom advised; yet it can now be done in so short a time and with so little disturbance, that out of my last 24 cases, all have recovered except one, leading to considerable prolongation of life in the malignant, and to the saving of life in the simple cases.

Cancer.—In the seventies, any one with carcinoma of the stomach was at once given up as hopeless, and only in 1879 was the first attempt made by Pean to remove a malignant pylorus, the first successful operation being performed by Billroth in 1881, when the operation was looked on with as much disfavour as was the first attempted complete gastrectomy a few years ago by Connor in America; yet Schlatter's patient a little later lived fourteen months after complete gastrectomy, and I can point to a man in good health, on whom I performed almost complete excision of the stomach two and a half years ago, and to others now well who have had partial gastrectomy done. Professor Kocher's statistics in this branch of work are of great importance as showing that the radical operation may in some cases, if done thoroughly, prove curative.

We cannot insist too strongly on the importance of an *early diagnosis* of cancer of the stomach with a view to radical treatment, a subject I have recently considered at length,¹ and given a description of numerous cases treated surgically. I am firmly convinced that many deaths are ascribed to cancer, when the disease is inflammatory, and perfectly curable by the operation of gastro-enterostomy without removal of the tumour; this I can prove from my own experience in patients now living and well several years after an operation, which at the time it was thought would only be of a palliative nature.

The surgery of the stomach has made such rapid progress that in 103 posterior gastro-enterostomies which I myself performed up to December, 1902, for various diseases, including cancer, there was a mortality of only 3·8 per cent. this presenting

a great contrast with the results of the same operation in the series of cases collected from all sources, when in 1900 I gave the Hunterian Lectures on the Surgery of the Stomach. In the *Lancet* for Feb. 28th, 1903, will be found an address on gastro-enterostomy, giving a full account of the operation as now performed, with indications for the operation, and the complications that may occur after it and how to avoid them.

Ulcer.—Until quite recently gastric ulcer, except for one or two of its complications, has been considered to be a subject for medical treatment from first to last. The profession is, however, becoming awakened to the fact that it is not the trifling ailment it was once considered to be, and that it should from the first be taken seriously, for it is in the early stages that medical treatment can be employed to the best advantage, and in the later stages that general treatment is so often followed by relapse or by serious complications.

Loube, one of the greatest medical authorities on the subject, says that one-half or three-fourths of all cases will be cured by four or five weeks of treatment, but, if not better in that time, they will never be cured by medical treatment alone; and Einhorn says it is fatal directly and indirectly in 50 per cent of cases, when reliance is placed exclusively on medical treatment. It can be demonstrated that in the patients curable by medical means, surgery holds out a good hope of relief or cure in 95 per cent of cases, as I have shown in an address given before the London Polyclinic, June 12th, 1903, and in one given before the American Surgical Association.² The subject is too large to enter into minutely, but from what I have stated now, and in other places have given in detail, it will seem that in this, as in other diseases of the stomach, modern surgery has very great triumphs to record, both in the treatment of simple ulcer and in the many complications to which it gives rise.

Pyloroplasty.—In place of pyloroplasty, which although a successful operation at the time (my last 21 cases having all recovered) is not infrequently followed by relapse, Dr. Finney has performed a modified operation which may perhaps better be described as a **Gastro-duodenostomy**, in which the opening is made by an inverted U-shaped incision through the stomach, pylorus, and duodenum, thus making a large communication and in a better position. He suggests that in benign stricture of the pylorus this is a better operation than gastro-enterostomy.³

In *Congenital Hypertrophic Stenosis* of the pylorus, Dr. Cautley and Mr. Dent advocate pyloroplasty as being a better operation than gastro-enterostomy.⁴ The affection is probably much more frequent than is suspected, and is still not generally recognised, which is a misfortune, as it is quite amenable to surgical treatment.

Anterior Adhesive Gastritis is a much more frequent cause of stomach trouble and impaired nutrition than is generally recognized. Since I first drew attention to the importance of pyloric adhesions at the London Clinical Society in 1893, many papers have been communicated, and a vast amount of experience has accumulated. I have personally operated on a considerable number of cases, some of which have been reported.⁵ I have seen a number of cases in which the adhesions were so extensive that it was felt advisable to do a posterior gastro-enterostomy at the time of performing the gastrolisis, and I quite agree with M. Duplant⁶ that the two operations should be combined in many cases.

Hæmatemesis.—The surgical treatment of this condition after failure of general means is rapidly becoming established. Last year I had the privilege of opening a discussion at the Medical Society of London,⁷ in which I reported a number of operations for hæmatemesis, and gave the following classifications and conclusions:—

From the point of view of treatment it is convenient to classify the subject under two divisions, which are well marked clinically.

(1.) The sudden attacks of hæmatemesis or melæna, occurring usually in young anæmic women, threatening life immediately and frequently occurring without any, or with only slight preliminary symptoms, and in this class may be conveniently considered the hæmatemesis said to be due to vicarious menstruation, and the form known as post-operative hæmatemesis, for these three forms are all related in the fact that after death the stomach lesions seem altogether inadequate to explain the serious nature of the bleeding.

(2.) This class may be conveniently divided into two divisions, (a) The serious acute hæmorrhages often occurring at longer or shorter intervals, and preceded by, or associated with, symptoms of ulceration; and (b) The frequently repeated slighter hæmorrhages, where though no large amount of blood may be lost at one time, the steady

bleeding in the shape of coffee-ground vomit or blood in the stools leads to profound and other complications, these being associated either with chronic ulcer or malignant disease. The conditions coming under the second class are associated with obvious organic disease, usually ulcer of the stomach or duodenum, of a kind generally only amenable to operation; and in advocating surgical treatment for such of these cases as have bled seriously, one of the strongest arguments in its favour is that at the same time that the complication causing immediate anxiety is being treated, the disease giving rise to it will be cured.

The operations that may be performed for gastrorrhagia are: (1) Gastro-enterostomy, (2) Exploratory gastrotomy, (3) Ligature *en masse* of the mucous membrane, (4) Excision of the ulcer, (5) Pylorotomy or partial gastrectomy, (6) Pyloroplasty, (7) Pylorodiosis, or Loreta's operation, (8) Cauterisation of the ulcer and of the bleeding surface, (9) Ligature in continuity of the principal arteries of the stomach, and (10) Ligature of the bleeding vessel *in situ*. It will be seen that the operation I prefer is gastro-enterostomy, which can be performed expeditiously and without severe shock; it acts by draining the stomach into the jejunum, relieving the hyperacidity of the stomach contents, and giving physiological rest to the stomach. Even if some other operation, such as ligature of the vessels or excision of the ulcer, be performed, I think that rest should still be secured by the performance of gastro-enterostomy. That gastro-enterostomy alone may occasionally fail we must admit, but as a rule it will succeed, not only in arresting the bleeding, but in curing the disease on which the bleeding depended.

In operating for hæmatemesis, if there be no sign of ulceration on the stomach wall, I would advise gastro-enterostomy alone, but if there be distinct evidence of a chronic ulcer on the anterior wall, or where it can be safely reached, then excision of the ulcer should precede gastro-enterostomy. If there be a tumour of the pylorus or evidence of a chronic ulcer, and adhesions are not extensive, pylorotomy will be the better operation. If the ulcer be adherent to, or eroding the pancreas, I think it is better to be content with gastro-enterostomy, and not to meddle with the ulcer, and this applies if the ulcer be in any region not readily accessible, where the removal of the ulcer would involve a difficult and prolonged operation. Although both pyloroplasty and pylorodiosis act by giving the stomach physiological rest, I would not advise either as a rule, for they

are apt to be followed by relapse ; moreover, gastro-enterostomy is much more efficient and a safer operation. Ligature of the principal arteries of the stomach would seem to me to be an uncertain method, and though quite easy of application, I should only think of performing the operation as an accessory to other treatment. Ligature of the bleeding vessel *in situ*, which seems to be very simple, has been tried and failed on all occasions on account of the friability of the tissues, unless, as in the case I have recorded, the mucous membrane has been taken up and ligatured *en masse*.

The conclusions I would urge concerning the treatment of hæmorrhage from the stomach or duodenum are as follows :—
 (1) *Prevention*—all cases of acute uncomplicated gastric ulcer should be submitted to thorough medical treatment in the shape of long-continued rest and attention to diet, and not dismissed from observation until a sufficient time has elapsed to show that they are well. (2) *In acute hæmatemesis* of the first variety, further accuracy in diagnosis is urgently needed ; and the co-operation of the physician and surgeon is advisable in such cases if relief be not obtained by medical and general treatment, so that surgical means may be adopted if the bleeding is believed to occur from a large vessel, or is recurring or continuing and risking life, but seeing that capillary hæmorrhage is usually capable of relief by medical means alone, medical should always precede surgical treatment. (3) *In profuse recurring*, as in all chronic hæmatemeses associated with gastric ulcer or other organic disease, surgical treatment is decidedly called for.

REFERENCES.—¹*Brit. Med. Jour.*, April 25, 1903 ; ²*Lancet*, May 25, 1901 ; ³*Bull. Johns Hopkins Hosp.*, July, 1902 ; ⁴*Lancet*, Dec. 20, 1902 ; ⁵*Diseases of the Stomach and their Surgical Treatment*, Baillière, Tindal and Cox, p. 222 ; ⁶*Rev. de Méd.*, No. 8, 1903 ; ⁷*Lancet*, Dec. 13, 1902.

STONE. (See “Bladder, Surgery of.”)

SUNSTROKE. (See “Hyperpyrexia.”)

SUTURES. (See also “Arteries,” “Veins,” and “Disinfection.”)
Priestley Leech, M.D., F.R.C.S.

Milton,¹ of Cairo, describes a form of removable suture which may be very convenient on some occasions. The suture is applied as follows : A mounted needle with an eye near the point is threaded with a long piece of silk ; supposing that the peritoneum is to be sewn, the two layers are defined, and the

needle (with the long end of the thread on the left hand or upper side of the needle as it pierces the peritoneum) is passed through both layers; the needle is then withdrawn, leaving a loop of silk on the other side; through this loop the assistant passes from below upwards the end of a length of silkworm-gut, and the loop of thread is drawn tight; the needle is then passed through both layers, and a second loop is formed above the first; the silkworm-gut is passed through this second loop, which is then also drawn tight. This process is repeated until the incision is closed. The needle is then unthreaded, and at each end of the wound there is a silk end and a silkworm-gut end. The silkworm-gut passes through the loops, and is moved gently backwards and forwards to see that it can easily be withdrawn, and that it is not kinked. The two ends of gut and silk are threaded separately on a needle, which is passed through the skin at each end of the wound, and are then tied on the surface of the skin and cut a convenient length. The skin wound is then sewn up. When the stitch is to be removed, all that has to be done is to cut the knot in the silk side at one end of the incision, and on the gut side at the other end; the silkworm gut is first withdrawn, and then the silk thread, having lost its support, is easily withdrawn. The suturing can be done rapidly, and the only point requiring special attention is not to pull the silk loops so tight that they drag the silkworm gut thread into the stitch holes, or on to the silk side of the wound.

He has employed this stitch in cases of laparotomy, radical cure of hernia, in supra-pubic cystotomy, for suturing the pleura in cases of abscess of the liver, and in colporrhaphy. If the incision is curved, more than one length of silkworm gut will have to be used, as if the thread has to curve round too great a part of the circle it will be found to drag on the loops on an attempt at withdrawal, and will not run.

REFERENCE.—¹*Lancet*, June 6, 1903.

SYPHILIS.

J. Thomson Walker, M.B. Ed., F.R.C.S

* *Bacteriology*.—Professor Max Schüller¹ describes certain parasitic bodies discovered by him in the primary, secondary, and tertiary lesions of syphilis. These are capsulated bodies, usually pear-shaped or triangular, brownish yellow in colour, and darker in the centre, which becomes almost black. Other bodies similar to these, but non-capsulated, were found in the same preparations, alongside which were empty capsules. Other

smaller round or oval bodies of a greenish yellow colour, and a characteristic striated wall of double contour, were also found isolated or in groups. These Professor Schüller believes are immature forms. These bodies were all found on the surface of the primary lesions, and also along tracks leading inwards from the surface.

Cover-slip preparations, which the author believes are valuable in the diagnosis, were best examined unstained after clearing in xylol. In sections good results were obtained with a saturated solution of iodine in potassium iodide. In the capsulated forms thionin was found of service, while Gram's stain demonstrated the miniature forms. Cultures were obtained on portions of tissue at 37·5 to 38° C. The young germs were especially numerous in these. According to the author these organisms belong to the same class as that described by him in carcinoma and sarcoma.

Pathology.—Professor Renaut, of Lyons, contributes to the *Phil. Med. Journal*² a very able paper on the pathology of syphilis and the para-syphilitic affections. The gumma, he says, is not the only neoplastic product of syphilis, and, moreover, the gummata vary in structure according to the tissue in which they develop. Thus the gumma of the liver differs from that of the brain, and both from that of the myocardium. "Each tissue makes its gumma as it can." The principal changes in syphilis are to be found in the arteries. The cutaneous hyperæmia which constitutes the secondary rash, results from a paresis of the muscular coat of the cutaneous arterioles, with a slight degree of transient endarteritis. In the later secondary stages of syphilis, the endarteritis, which may recur in the vessels of the skin, the viscera, or the nervous system, is more marked, and results in ischæmia of the tissues supplied, and consequent defective nutrition. The diseased arterioles become dilated irregularly, and hyperæmia or even stasis of the circulation results. Subacute endarteritis proliferans is the invariable effect of the syphilitic virus, and "chronic œdema and interstitial proliferation of the tissue supplied is the result." The morbid process is at first diffuse, and effects vast arterial territories; later it becomes limited to special organs and viscera.

Dr. G. A. Sutherland and Mr. Thomson Walker, in a paper read before the Society for the Study of Disease in Children,³ describe two cases of interstitial nephritis in congenital syphilis. In one of these syphilitic endarteritis of the cerebral arteries was also present. The changes in syphilitic endarteritis, according

to the authors, commenced in the vasa vasorum, and only secondarily affected the tunica intima. The changes consist in the development of granulation tissue in the adventitia, and later in the other coats. Changes in the elastic lamina were not specially characteristic of syphilis, although usually held to be so. This form of arteritis, according to the authors' experience, was as frequently a secondary as a tertiary phenomenon. The renal changes consisted in diffuse interstitial nephritis (*see Plate XXVII*). The naked eye changes might be very slight, and probably many cases were unrecognised. The authors suggested that syphilis played a more important and frequent rôle in the etiology of nephritis of childhood and adult life than had hitherto been recognised.

Goldsborough⁴ reports a case of syphilitic disease of the cerebral arteries in an adult. In this case gummata were present around the vessels. The most marked change in the vessels was in the adventitia.

DIAGNOSIS.—M. Breitmann⁵ maintains that although there are no specific signs of syphilitic heart disease, there is a combination of symptoms and a peculiar method of onset which characterise it. The author deals very fully with the symptoms attending the development of gummata in different parts of the heart.

(1,) Of the left ventricle, in which four clinical varieties are described ; (a) In small gummata no symptoms are produced ; (b) In larger gummata, and especially if situated near the apex, sudden death is produced in young individuals without previous symptoms ; (c) Sudden death after insignificant pseudo-anginal attacks ; (d) Slow onset of symptoms pointing to diminishing force of the heart. Generalised dropsy is very rare in syphilitic disease of the heart, and only marked in the latest stages.

(2,) When the right ventricle is affected sudden death is much rarer. Dyspnoea and cyanosis are the most frequent signs.

The author distinguishes four forms of syphilitic fibrosing myocarditis, with varying symptoms.

Lesions of the auricles give rise to symptoms simulating those of the ventricles. The author recognises the following changes in the pulse rate as due to syphilis.

(1,) Tachycardia, which is distinguished from that of nervous origin by its long duration, its regularity, its great frequency, its rapid disappearance under specific treatment, and its intractability to ordinary cardiac tonics.



J. W. Thomson Walker.

Interstitial Nephritis in Congenital Syphilis.

Sutherland and Thomson Walker's case. The diseased upper $\frac{4}{5}$ ths of the kidney is sharply defined from the normal lower $\frac{1}{5}$ th.

(2.) Bradycardia, the syphilitic form being diagnosed by the history and signs of syphilis after exclusion of all the causes.

The **Justus Test** for syphilis is based upon the fact that mercury given by inunction or by injection causes a diminution in the hæmoglobin of the blood. In healthy individuals this loss is rapidly replaced, but in syphilitic subjects compensation is retarded. Justus claimed that the reaction was observed in all untreated cases of congenital, secondary, and tertiary syphilis, and in the majority (13 out of 16) of cases of primary sore. The reaction was not obtained in latent or subsiding cases, nor when the drug was administered by the mouth.

According to the observations of Tucker⁶ the Justus test "has no practical value in the differential diagnosis of venereal ulcers, since the reaction occurs with an almost equal degree of frequency in the non-syphilitic conditions with which syphilis may occasionally be confused." Tucker's observations extend over 27 cases, comprising 13 primary chancres, 7 chancroids, 3 herpes, 3 genito-urinary tuberculoses, and one secondary syphilide. Of the primary cases 5 were positive and 4 negative; of the chancroids 4 were positive and 3 negative; of the herpes all were positive; of the tuberculous cases 1 was positive and 2 negative, and the single secondary syphilide was negative.

Dr. W. E. Huger⁷ gives expression to similar views.

Dr. Eugen Baroch⁸ draws attention to a mercurial reaction of the oral mucous membrane in syphilitics, which he believes possesses marked diagnostic importance. The initial application of a large amount of mercurial ointment caused, within eighteen to twenty-four hours, the appearance upon the tongue and oral mucous membrane of large red spots, which were somewhat serpiginous in appearance and were painful. The spots disappeared within a few hours, and did not return although the inunctions of mercury were continued. If such applications were discontinued for a long time, the reaction reappeared following a new initial inunction. No cutaneous reaction, such as that recently described by Herxheimer and Krause as occurring in early secondary syphilis, was observed. The appearance of this reaction Baroch holds indicates a positive diagnosis of syphilis, but its absence does not negative its presence.

Syphilis and Life Assurance.—A short resumé of a paper by Runeberg on this subject was given in the last issue of the *Medical Annual*. Runeberg's principal conclusions were that a subject should not be passed until three years after the initial lesion

that no case of syphilitic disease of the blood vessels, heart, or nervous system should be passed, and that cured cases of syphilis might be passed with an increased premium.

Salmonsens⁹ criticises these opinions. He does not agree that the cerebral softening, apoplexy, endocarditis, and nephritis, which often cause the death of old syphilitics, should be attributed to syphilis. The patient he thinks should be under observation for four or five years before being passed. The second four or five years should be met with an increased premium, but a patient who has remained well for ten years and has been regularly treated may be passed without risk.

Dr. Byrom Bramwell discussed this subject before the Edinburgh Medico-Chirurgical Society.¹⁰ He believed that syphilis tended to shorten life, and, with a few exceptions, in every case in which a history of constitutional syphilis was disclosed, that an extra should be imposed. Death directly due to syphilis was almost always the result of tertiary lesions. The date of development after infection of typical tertiary lesions was of great importance for insurance purposes. In 107 cases of grave cerebral and spinal syphilis, 12.1 per cent occurred during the first year after infection, 40 per cent during the first five years, and 68 per cent during the first ten years. It was probable that tertiary lesions developed in about 10 per cent of all cases of syphilis, and if it were granted that the expectation of life in every one of these cases was shortened by ten years, one arrived at the conclusion that on an average in every case of syphilis the expectancy of life was shortened by one year, as a result of tertiary lesions. The greatest mortality of syphilis was probably due to aneurysm of the aorta, to aortitis and resulting aortic incompetence, to para-syphilitic lesions (tabes and general paralysis), to cirrhosis of the liver, and to arterial degeneration, etc.

An interesting paper by Matthes¹¹ on the fate of syphilitic patients who had received treatment in the Medical Clinic at Jena since 1860, has bearing on this question. The after history of 568 cases treated for secondary syphilis, and 130 cases treated for tertiary syphilis, was traced. Up to the end of 1900, 150 of the former and 52 of the latter had died. In 150 cases the exact cause of death was ascertained, and was as follows: 36 died of phthisis (a percentage which agreed with the general mortality from this disease in Germany) 5 per cent died of pneumonia, while diseases of the circulatory apparatus accounted for 19.37 per cent. Tabes dorsalis occurred in 52 per cent of

the cases treated for secondary syphilis, and in 3 per cent of the cases treated in the tertiary stage. There were 6 cases of general paralysis among the cases treated for secondary syphilis, and 2 cases in those in the tertiary stage. "Under the most favourable circumstances only 7 per cent of males infected with syphilis suffer from tabes or general paralysis." The author concludes that generally speaking the average patient's span of life was somewhat shortened by syphilis, but as a large number of syphilitics reached an advanced age, one could not speak of a shortening of life in any individual case.

TREATMENT.—Dr. Leredde¹² discusses the necessity for treating the graver complications of syphilis solely by means of **Mercurial Injections**, and for considering an increase in the present dosage of mercury in such cases. The arguments in favour of injections are those advanced by all advocates of this method, namely, accuracy of dosage and maximum effect of the mercury administered.

He does not attach the slightest importance to the particular salt employed, whether soluble or insoluble, with regard to its therapeutic effect. The efficacy depends upon the amount of mercury introduced into the organism. The therapeutic activity of the soluble salts, such as cyanide (79.32 per cent of mercury) and the sublimate (73.80 per cent) is in his experience much superior to that of the insoluble benzoate (42.25 per cent) and biniodide (44.05 per cent). **Calomel** is the salt richest in mercury (84.92 per cent) and the injection of this salt produces a better therapeutic effect than that obtained from a similar quantity of a soluble salt, such as corrosive sublimate, spread over a similar period. The superiority of calomel is due to the local and general reaction it produces.

According to the author, the toxic doses of mercury do not approximate so closely to the therapeutic doses as is generally supposed. Dermatologists successfully use small doses of mercury in the great majority of syphilitic cutaneous lesions, and the neurologists have allowed themselves to be guided by them in the dosage. We must, however, prescribe *much larger doses* in grave or obstinate visceral lesions, and aim at effecting a cure in the shortest possible time. It may be a question of hours in a case of cerebral or spinal lesion, for at any moment a vessel may become obliterated and lead to softening, which is irreparable. The only warning to be taken into consideration in the determination of the maximum dosage of mercury, is furnished

by the symptoms of mercurial intoxication, namely, fever, backache, and prostration. In lesions of the nervous system maximum doses should always be employed.

Para-syphilitic affections (tabes and general paralysis) are, he states, amenable to mercury if the treatment is started sufficiently early, and failures in some cases may be ascribed to the fact that a certain percentage of these nervous diseases are non-syphilitic.

Dr. Kullisch¹³ sounds a warning note in regard to the danger of **Intra-muscular Injections** of mercury. In a case in which he injected salicylate of mercury into the gluteal muscles, large gummata appeared on each side at the point of puncture.

Dr. E. H. Douty (Davos Platz) in a very able and suggestive paper,¹⁴ advocates the **Open-air Treatment** of syphilis. He draws a parallel between tuberculosis and syphilis. In his experience the course of syphilis was mildest in robust, athletic men, leading an out-door life, in spite of the fact that these individuals invariably neglected to carry out mercurial treatment. In five years experience at Davos he found that 30 per cent of male patients with phthisis were syphilitics, and these cases improved wonderfully under the open-air method combined with gentle mercurial treatment. He found that the experience of others in similar sanatoria on the continent put the percentage of syphilitic tubercular patients at an even higher figure. Dr. Douty recommends that the syphilitic should certainly devote a year, or better, two years, if he can afford it, to an open-air life.

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SYPHILIS (of Infants).

G. F. Still, M.D.

Wasting as a symptom of congenital syphilis is not uncommon in infants, and in older children, from the age of three years to puberty, according to Kerley,¹ malnutrition which persists in spite of good treatment is strongly suggestive of syphilis. Hydrocephalus is certainly a rare result of congenital syphilis. Stowers² records a case in a child aged ten months, the

enlargement of the head being first noticed apparently at eight months ; the infant had been under treatment earlier for a skin eruption of syphilitic origin, and another child in the family was under treatment for congenital syphilis. The occurrence of locomotor ataxy as a result of congenital syphilis is almost without a record. Babinski³ now places two such cases on record, one in a girl aged fifteen years, and the present writer⁴ has mentioned one in a boy aged about fourteen years.

The hair of infants with congenital syphilis sometimes presents characteristic features. Hutchison⁵ describes it as unusually long, straight, fine in texture, and unusually dark in colour ; such hair he considers to be of the greatest value in diagnosing early cases of congenital syphilis. The relation of hæmoglobinuria in children to congenital syphilis is now well recognized. McCaw⁶ records such a case in a girl aged five years and ten months, who showed evidence of syphilis. The frequency of enlargement of the spleen with congenital syphilis was pointed out long ago by Gee ; it has recently been emphasised by Carpenter,⁷ as the commonest cause of "splenomegaly" next to rickets. Marfan⁸ considers syphilis to be actually the chief cause of enlargement of the spleen in infancy ; he found enlargement in about 50 per cent. of cases of congenital syphilis, and advises that even if rickets be present splenic enlargement in an infant should always lead to enquiry for other evidence of syphilis. He points out that the splenic affection is almost always associated with more or less marked anæmia. Long ago Parrot described "pseudo-paralysis" as a symptom of congenital syphilis ; Scherer⁹ found this symptom present in 11 out of 50 cases of hereditary syphilis. In most cases it appears before the age of three months, and takes the form of paralysis of one arm ; usually the apparent palsy is due to an obvious lesion of the bone, but there are cases in which no such lesion is present, and the cause of the temporary failure to use the limb is obscure.

PROGNOSIS.—Karcher¹⁰ of Bale, has published some interesting observations on the fate of children with hereditary syphilis. It seems that many children lose all signs of congenital syphilis after the age of puberty.

TREATMENT.—The extremely important question whether a syphilitic infant should be nursed by its mother, has recently been under discussion at the New York Academy of Medicine. J. E. Winters¹¹ held that, contrary to the teaching of some

observers, an infant with inherited syphilis should be suckled by the mother. The large mortality from congenital syphilis in some countries was due, he thought, probably to feeding them artificially. Breast feeding had also another advantage in the possibility it afforded of treating the infant with drugs administered to the mother in cases where direct administration of mercurials to the infant disturbed its digestion. Winters had never known a syphilitic infant to infect its mother, and many observers, including Colles and Hutchinson, had doubted such an occurrence. A. Jacobi, however, stated that he had seen exceptions to this rule, and had published one such case. He agreed, however, that this was so exceptional as to "prove the rule," and that a syphilitic baby should be suckled by its mother, but not of course by a wet nurse.

Spolverini¹² recommends the administration of **Iodine by Intravenous Injection** in syphilitic infants. A solution of 1 gram of iodine with 3 grams of potassium iodide in 100 grams of distilled water is used, a maximum dose of 5 c.cm. being injected. Hutchison (*loc. cit.*) recommends the administration of **Mercury** by mouth, giving $\frac{1}{2}$ a grain of grey powder three or four times a day, and advises continuing the administration "for nearly a year."

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TACHYCARDIA. (*See also* "Bradycardia.")

Prof. A. H. Carter, M.D., F.R.C.P.

Morrissey¹ reviews this condition in a careful paper. He points out that the term should be reserved for definite recurrent paroxysms, attacks of palpitation, during which there may be great mental distress, prostration, and dyspnoea, and the temperature is slightly raised. The attack is sudden in its onset; the patient may be entirely unconscious of the increased frequency of the heart's action, and the reversion to the normal condition is as sudden as the onset. The attacks may persist for years with slight or prolonged intermissions. The rhythm of the heart may be regular or irregular. The cardiac dulness is increased, and acute dilatation may rapidly supervene at the beginning of an attack, quickly disappearing on recovery. On

the other hand it may persist, causing dyspnœa, dropsy, and (sometimes) apoplectic seizures. Attacks may be classified as "short" or "long," the latter being as would be expected the more serious.

There is good reason for the opinion that myocardial disease in some form is a fairly constant factor in paroxysmal tachycardia, at least so far as to modify the automatic and coordinate nervous mechanism of the heart. The pathology is very obscure. Among other theories it has been attributed to recurrent irritation of the cervical sympathetic, to paresis of the vagus, to a lesion of the myocardium, or of the cardiac nerves or ganglia, and to a central nervous lesion. The great difficulty in constructing a suitable hypothesis lies in the fact that tachycardia may emanate from any one of the sources mentioned, but the limited amount of material would seem to prove that, in the majority of cases, the underlying factor appears to be some structural change in the myocardium. It is probably not in one, but in several diverse causes that tachycardia originates.

We are too prone to name, and, primarily, regard the greater number of diseases from an anatomical standpoint; the recognisable modification of structure, whether gross or minute, is made the basis upon which our knowledge is established, and even when the disease is studied clinically, it is with more or less expressed reference to the associated or causative structural perversion. So that even when we find myocardial degeneration, we must be careful not to reason too closely to the *post hoc ergo propter hoc*. A broad and comprehensive view of all the circumstances, both recent and remote, must be included in our appreciation of the facts presented in each individual case, otherwise an element of confusion will be introduced fatal to a scientific diagnosis.

The TREATMENT of tachycardia is in principle that of the condition from which it arises, or with which it is associated; but as this is admittedly difficult to determine, remedial measures must for the most part be empirical and tentative.

According to Merklen² paroxysmal tachycardia may be induced in predisposed persons by sudden shocks, accident, exhaustion, certain reflex irritations from gastric, intestinal, renal, or uterine disease. Thus, hepatic colic, pregnancy, menstrual disorders, ovarian operations may bring about paroxysmal tachycardia. Also certain infective or toxic conditions, such as alcoholism, tobacco, tea, and lead, influenza,

acute rheumatism, and tuberculosis. The presence of any organic disease renders the prognosis much worse.

Travers Smith³ records an interesting case of paroxysmal tachycardia associated with epilepsy, occurring in a girl, æt. 14 years. After repeated attacks of tachycardia occurring during six months, she began to have attacks of minor and (later on) of major epilepsy, all of which were very much benefited by a course of **Bromide of Potassium**. The case throws light upon at least one variety of this obscure cardiac neurosis.

O'Carrol⁴ records another case, strongly suggestive of epileptic paroxysms, which was apparently cured by a course of bromides.

REFERENCES.—¹*Med. Rec.* Feb. 7, 1903; ²*Thèse de Paris*, 1902. ³*Med. Press*, Dec. 3, 1902; ⁴*Ibid*, Jan. 7, 1903.

TEETH, Diseases of. (See "Caries, Dental"; "Cysts, Dental"; "Dentine, Sensitive"; "Neuralgia, Dental"; "Pyorrhœa Alveolaris"; "Septicæmia, Dento-Buccal.")

TEMPERATURE, (Method of Observation). *Robt. Hutchison, M.D.*

Burton-Fanning and Champion¹ publish investigations on the comparative value of the mouth, rectum, urine, and groin for the observation of the temperature; they also record the effects on the

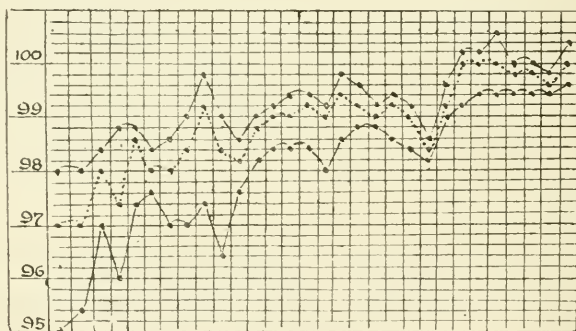


Fig. 20.—Oral temperature readings of one patient taken at the end of five, ten, and fifteen minutes. The top line shows the thermometer held in the mouth for fifteen minutes; the middle dotted line indicates ten minutes; and the lowest line five minutes.

temperature of exercise, in health, tuberculosis, and some other diseases, with charts of their observations, which by the courtesy of the proprietors of the *Lancet* we reproduce. They find the time commonly allowed for the thermometer to lie in the

mouth is usually too short to obtain a correct reading ; and that under certain conditions this is especially the case, as for instance after breathing cool air with parted lips, exercise entailing rapid respiration, or the contact of cold with the outside of the cheeks. With any of these the interior of the mouth becomes specially cooled, and a longer time is required to gauge the correct body temperature. In everyday work they recommend that the mouth should be kept continuously closed for ten minutes in order that the correct temperature may be obtained. The difference between the readings for five minutes and for fifteen minutes might alter considerably the complexion of a case of pulmonary tuberculosis. (*Fig. 20*).

They found that certain drugs raised the oral temperature, presumably by dilating the capillaries ; of these the sucking of a menthol lozenge for half a minute is stated to have caused a rise

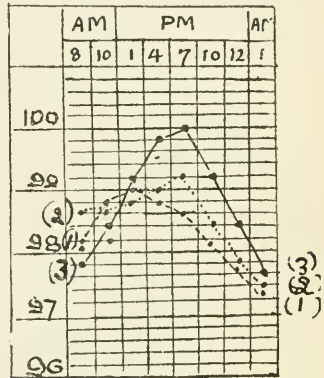


Fig. 21.—Illustrating rectal temperature in a healthy man. (1) Whole day spent in bed. (2) Whole day spent in chair. (3) Whole day spent on the feet without active exercise.

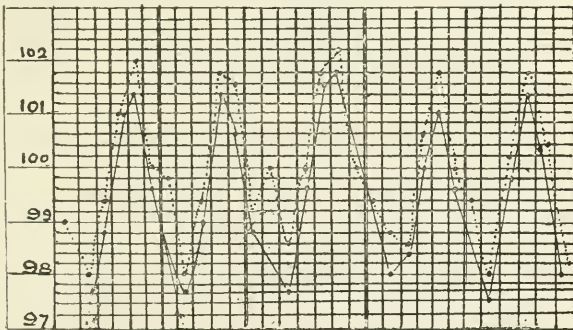


Fig. 22.—Showing close correspondence of oral and rectal (dotted lines) temperature in a case of tuberculous peritonitis confined to bed.

of 1.6°. Rectal temperatures were found to be totally different after rest and after any movement, (*Fig. 21*). Axillary and inguinal temperatures may require from 15 to 60 minutes before

the maximum is reached. The rectal temperature is on an average 0.4° higher than that of the mouth. (*Fig. 22*). They consider the urine untrustworthy for the observation of temperature. The rectal temperature was 0.6° higher than that of the groin, and 0.9° higher than that of the axilla.

As a result of their experiments they state that the effects of exercise on the temperature of a healthy man has been generally underestimated. A very slight amount of movement only is required to produce an appreciable rise of the mercury, while with more exertion they noted a rise of as much as $3\frac{1}{2}$ degrees. The fluctuations of temperature consequent on exercise and

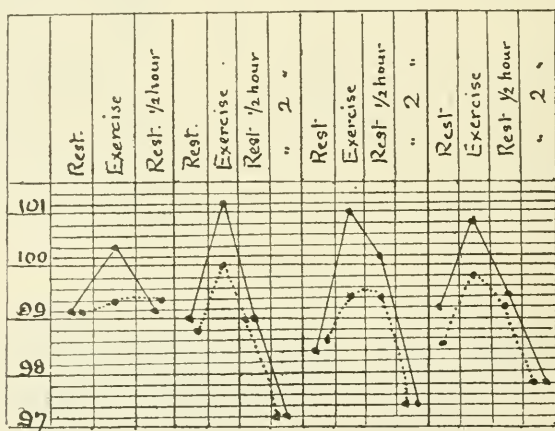


Fig. 23.—Oral (dotted lines) and rectal temperatures of patient with tuberculosis, showing approximation under condition of rest, and divergence of the two readings after exercise.

repose can only be reliably observed in the rectum; in no case does the oral temperature of exercise show the correspondence that obtains during rest to that of the rectum. (*Fig. 23*).

In health their experiments show that with exercise a distinct rise constantly occurs. the amount of which depends on the severity and duration of the effort, and on the individual peculiarities. This exercise reaction commences abruptly, but the continuance of exercise causes a more gradual further rise. Various forms of exercise (tennis, bicycling, golf) were used in the large number of experiments from which their results are summarised. (*Figs. 24, 25*).

culous patient is characterized by the constancy of his reaction to a *slighter* degree of effort, and by the fact that this reaction usually *exceeds* that of health or other diseases, (Figs. 26, 27).

The average rectal rise of temperature produced by a walk of a quarter-of-an-hour in cases of non-febrile tuberculosis was 1° . The authors note the frequency of a distinct rise of temperature during the six days preceding menstruation in 18 out of 34 women under treatment for pulmonary tuberculosis. High frequency electric currents were found to cause a rise of temperature of from

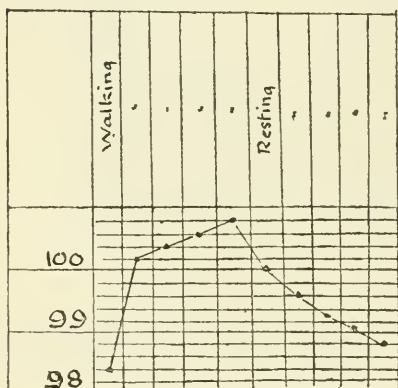


Fig. 26—Ten minutes readings of rectal temperature during slow walking in a case of pulmonary tuberculosis.

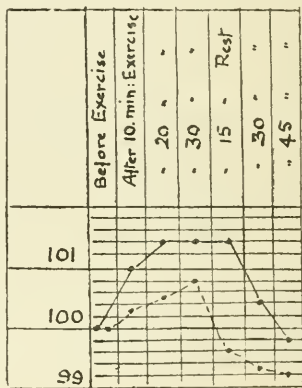


Fig. 27—A patient with pulmonary tuberculosis and a healthy man (dotted lines) whose rectal temperatures agreed, walked side by side and observed the temperatures each ten minutes and again during rest.

1° to 3° in 8 tuberculous patients after an application of ten minutes. With two healthy persons there was a rise of only 0.4° to 0.6° after the same application. The administration of galvanic and faradic electricity to patients with tuberculosis caused no rise of temperature.

All the results mentioned in this paper appear to be the result of careful observation on a large number of cases.

REFERENCE.—¹*Lancet*, March 28th, 1904.

TETANUS.

Purves Stewart, M.A., M.D.

ETIOLOGY.—In addition to the commonly-recognized modes of infection, such as lacerated wounds, compound fractures, umbilical-cord infection, etc., other channels of entrance for the

tetanus bacillus have lately occupied a considerable share of attention, notably the *injection of solutions of gelatin*. In the recorded cases the gelatin has usually been injected either as a hæmostatic in internal hæmorrhages, or in aneurysm, with the object of inducing coagulation in the sac. Thus Lorenz¹ reports two fatal cases of tetanus following such gelatin injections, and others are also recorded by Gradenwitz,² Sadnikoff,³ etc. Hence the importance of careful sterilisation of gelatin immediately before such injections. Tetanus has also occurred occasionally *after vaccination*. The source of infection is probably most frequently adventitious dirt or dust settling in the vaccine virus or on the sore. McFarland,⁴ of Philadelphia, has tabulated 95 cases of post-vaccinial tetanus up to 1902, all of them except 14 being collected by private correspondence. Of these no fewer than 63 occurred in 1901. This complication is unknown in Germany, France, or Europe generally, it is very rare in England, and chiefly occurs in America, having been epidemic in the month of November, 1901, especially in the towns of Camden and Philadelphia. The prevalence of post-vaccinal tetanus in certain districts indicates that geographical conditions (not atmospheric or telluric) have a pronounced influence upon its incidence. Carelessness in the treatment of the vaccination wound undoubtedly facilitates its secondary infection with tetanus. In nearly every case where McFarland was able to secure details it was stated that the vaccination "took well." This might mean that cases with marked local lesions have the greatest chance of secondary infection, or, what is less probable, that the lesion was caused by an impure virus containing the tetanus bacillus as well as other organisms. Most likely of all, as McFarland concludes, it is that the virus was secondarily rendered impure from implantation of tetanus bacilli derived from manure or hay. Occasionally, through carelessness or accident in the preparation of the vaccine virus, the number of bacilli becomes greater than usual, and may lead to the epidemic appearance of tetanus.

TREATMENT.—Before the microbic origin of tetanus was discovered it used to be treated simply by rest in a darkened room, together with the administration of large doses of chloral or other antispasmodics. The modern treatment consists in thorough disinfection of the original wound with strong **Antiseptics**, and in some cases it may be possible to excise the infected area outright. A considerable amount of evidence has now

been accumulated which indicates **Serum-Therapy** as the most efficient method for the prevention and treatment of tetanus. The tetanus antitoxin may be administered either subcutaneously or by intra-venous, intra-cerebral, or sub-arachnoid injection. Of these the subcutaneous method is the most convenient, and has proved satisfactory in a considerable number of severe cases, as, for example, in Essex Wynter's case,⁵ where sixty doses, each of 10 c.c., were given at intervals of six hours until the spasms subsided; and in Sedgwick's case,⁶ in which 20 c.c. were administered at first, and then 10 c.c. three times a day for six days, twice a day for five days, and at last once a day for a week, 370 c.c. in all being used. **Morphine** in the former case, and **Chloral** and **Bromide**, and later **Chloretone** in the second, were also administered at frequent intervals to secure sleep. It must always be borne in mind that tetanus antitoxin only counteracts the toxins in the organism, and has no action upon the tetanus bacilli at the site of infection. Energetic treatment of the wound is therefore of supreme importance. Thus, for example, in an instructive case recorded by Bain,⁷ where a patient was wounded in the palm by a blank cartridge, the powder-stained area was excised within an hour after the injury, and the tissues so removed were examined bacteriologically, with the result that a virulent culture of tetanus bacilli was obtained. But the patient herself did not develop any signs of tetanus, as she would almost certainly have done had not the wound been excised.

Good results are also recorded from Baccelli's method of subcutaneous injections of a 2 or 3 per cent solution of **Carbolic Acid**, 12 to 15 c.c. of the solution being injected daily in doses of 1 to 1½ c.c. In Italy the statistical results of this method have been striking, and some observers claim that carbolic acid is almost a specific. Thus in Domenichini's⁸ case injections of carbolic solution were made for twenty-two days, with complete recovery as a result. Claude and d'Heucqueville⁹ also report a successful case, and Babes, of Bucharest,¹⁰ speaks strongly in its favour. It is well therefore to bear this treatment in mind as a useful adjuvant to serum-therapy, or as a substitute where anti-tetanic serum is not obtainable.

Another method of treatment which has been applied in a smaller number of cases is by means of subcutaneous injections of **Brain Emulsion**. Krokiewicz¹¹ has collected 16 cases so treated, of which 13 recovered and 3 died. Of these, four cases

were under his own charge, one of which died whilst the other three recovered. He employed an emulsion of rabbits' brains, injecting the emulsion daily or at intervals of several days, according to the severity of the symptoms. Tikanadze¹² employed an emulsion of a young pig's brain, rubbed up with sterile salt solution, injections being made daily for three days (10 grammes of brain with 30 c.c. of salt solution for each injection). The patient recovered.

REFERENCES.—¹*Deut. Zeits. f. Chir.* Nov. 1901; ²*Cent. f. Gyn.* Sept. 13, 1902; ³*Roussky Vrach.* Nov. 9, 1902; ⁴*Lancet*, Sept. 13, 1902; ⁵*Ibid.* Nov. 15, 1902; ⁶*Brit. Med. Jour.* July 26, 1902; ⁷*Ann. Surg.* March, 1903; ⁸*Gaz. Med. Lombarda*, Sept. 21, 1902; ⁹*Bull. de la Soc. Méd. des Hôp. de Paris*, Oct. 30, 1902; ¹⁰*Med. Rec.* Nov. 29, 1903; ¹¹*Klin. Therap. Woch.* Feb. 8, 1903; ¹²*Roussky Vrach.* Aug. 24, 1902.

TETANY.

Purves Stewart, M.A., M.D.

A new symptom, named the "phrenic phenomenon," has been described by Solovieff.¹ This consists in a contraction of the diaphragm synchronous with the heart-beat. The abnormal excitability of the nerve-trunks in tetany is well known, and both Trousseau's phenomenon—the production of a tetany posture on compressing the nerve-trunks of the limb—or Chvostek's sign—contraction of the facial muscles on tapping the facial nerve—depend upon this irritability. Solovieff describes a typical case of tetany in which there was palpitation, and it was noticed on inspection that at each beat of the heart the left lower intercostal spaces were drawn inwards, whilst the lower ribs were elevated and the epigastrium pulsated. The heart and vessels were normal. Examination with the X-rays showed that these peculiar pulsations were due to movements of the left half of the diaphragm, synchronous with the heart-beats. The right half of the diaphragm moved much more slowly and passively as a result of traction from the left side.

REFERENCE.—¹*Roussky Vrach.* May 11, 1902.

THERMIC FEYER. (See "Hyperpyrexia.")

THORACIC DUCT, (Wounds of). Priestley Leech, M.D., F.R.C.S.

The wounding of the thoracic duct, especially of the cervical portion, has always been regarded as a serious accident.

S. Victor Veau¹ says Beneteau² has collected 21 cases of wounds of the duct; most of these have been caused by the surgeon's knife. The duct was wounded in eight cases during the extirpation of tuberculous cervical glands; in three cases during

removal of glands invaded by malignant disease of the breast : and once while ligaturing the subclavian artery for aneurysm. Theoretically a wound of the thoracic duct is a serious matter, but practically the lymphatic circulation is always re-established by collateral channels. The wound of the duct may show itself immediately by the escape of a milky fluid, the chyle, or the discharge may only be noticed after some days ; in one case it was observed four hours after the operation. The fluid is viscous, and coagulates almost immediately ; the quantity varies, and where this is great the general health is rapidly and profoundly affected ; the symptoms are rapid loss of flesh, with headaches, which are sometimes intense, and intense thirst. The urine is diminished, and the surgeon becomes alarmed ; but Veau says that after a variable time the flow ceases and the prognosis is a favourable one. The wound may break out after it has once healed, and a fistula may result, which remains for a much longer time. The best method of arresting the flow is by pressure ; as soon as the wound of the duct is recognized the surgeon should make careful and methodical compression of it. If the flow occurs some time after the operation, the compression should be made by means of a tampon in the supra-clavicular fossa. Do not drain, for as long as the wound is drained the flow of chyle will continue. Forcippresure or ligature may be used, but as a rule compression is sufficient. Cushing and Porter managed to suture the wound in the duct successfully.

REFERENCES.—¹*Gaz. des Hôp.* Oct. 31, 1902 ; ²*Plaie du canal thoracique à la base du con* (Thesis).

THROMBOSIS.

Priestley Leech, M.D., F.R.C.S.

B. R. Schenck¹ says they have had 48 cases of post-operative crural thrombosis in the Johns Hopkins Hospital, of which 28 were after operations for the removal of large pelvic tumours. His conclusions are as follows : Thrombosis of the crural veins is more common after pelvic operations than is generally recognized. It occurs more frequently in those cases in which large tumours springing from the pelvic organs have been removed. It rarely follows extra-pelvic operations. In his series it has been infrequent after infected cases. The anæmia and cachexia in consequence of new growths seem to be factors in its causation. Constipation and enemata play a doubtful part in the etiology. Traumatism at the time of the operation should be borne in mind, and deep retractors used with extreme care. Infection

is undoubtedly of great importance, but its frequency is difficult to decide. This complication often occurs when least expected, and usually late in convalescence. Albumin in the urine is more frequent in these cases than in those running an uninterrupted course. The pulse curve of Singer does not always occur. The results of rest and elevation for the full length of time are admirable. When the time is lessened, swelling and pain persist, and the danger of pulmonary embolism is increased.

Müller² endorses Bennett's advice (see last year's *Annual*) as to operation in thrombo-phlebitis in varicose veins. He also has practised ligation of the vein and removal of the diseased portion where infective thrombosis has occurred. The results in ligation of the internal jugular in lateral sinus thrombosis of other veins has given good results in the cases where Müller has tried it.

REFERENCES.—¹*New York Med. Jour.* Sept. 6, 1902; *Univ. Penns. Med. Bull.* July, 902; *New York Med. Journ.* Dec. 6, 1902; ²*Arch. f. klin. Chir.* Bd. 66.

TIC DOLOUREUX. (See "Neuralgia.")

TOE NAIL, (Ingrowing). *Priestley Leech, M.D., F.R.C.S.*

This condition is almost invariably an acquired one, caused by wearing a too narrow shoe or stocking, thus crowding the toes together. This is made worse by the wearing of high heels, which cause the feet to descend into the front of the boot. Clarence McWilliams¹ says the overgrowing of the skin is rendered worse by the practice of rounding off the corners of the nail; the nail should be trimmed squarely across, leaving the corners long enough to project beyond the fold of skin at each side. Palliative treatment may be useful in some few cases. Get proper-fitting boots; elevate the buried nail edge, and insert a small piece of lint with some lead nitrate or solution of alum underneath the edge, or tinfoil may be inserted under it. This treatment is often painful, and may require cocaine to carry it out, and then the granulations may be scraped away.

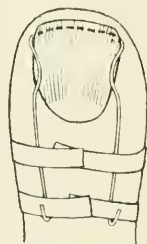


Fig. 28.

In not too advanced cases G. B. Webb's device (*Fig. 28*) may be useful. As the figure shows, a piece of silver wire as thick as an ordinary pin is carefully bent to fit under the free margin of the nail, catching and lifting up the lateral nail edges as far

back as the cuticle. The ends are carried along the dorsum of the toe, and strapped to the skin by adhesive plaster. A boot may be worn with this, and the wire must be retained until the nail grows out properly.

In most cases some radical procedure is the best and quickest. Williams says the following has given very good results. If there is time, prepare the foot and toes the evening before as for any other surgical operation. The granulations particularly should be disinfected; if not too painful, scraping them away is best. A small rubber tourniquet is wound round the base of the toe and tied tightly. This not only renders the operation bloodless, but also less painful, by confining the cocaine solution to the toe. Ethyl chloride is sprayed upon the toe until it becomes perfectly white; and the needle of a syringe containing

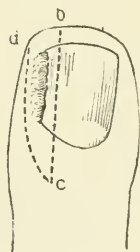


Fig. 29.

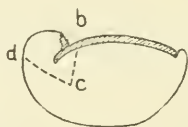


Fig. 30.

a 2 per cent solution of cocaine is inserted in three places: one at the very base of the nail in the matrix; a second in the middle of the side of the nail; and a third under the nail bed in front. After the toe has become analgesic, an incision *b c* is made directly through the nail, beginning well beyond the base and carried down to the phalanx itself underneath; a second incision *c d* passes through the prominent overhanging cuticle at such a point that the soft parts on the side after the operation shall be flush with the newly-formed nail edge. The two incisions join underneath, and all the soft parts, together with the nail included between these two incisions, are excised in a wedge-shaped manner. (Figs. 29, 30). The all-important point is the going far enough back beyond the base of the nail, and sufficiently deeply to excise all of the matrix, which will prevent reproduction of the offending nail edge. A couple of sutures will bring the edges together. It is a modification of Auger's method.

REFERENCE.—¹*New York Med. Jour.* June 20, 1903.

TONGUE, (Cancer of).

Priestley Leech, M.D., F.R.C.S.

The *Practitioner*¹ devotes an excellent special number to this subject. Considerations of space forbid any attempt to abstract the whole of the articles, which every surgeon should make a point of reading. Attention will only be here directed to a few points in diagnosis, the operative measures, and the results.

DIAGNOSIS.—In some cases the diagnosis of cancer of the tongue is easily made; in others the most careful surgeon may make mistakes, or find it impossible to be sure without a careful microscopical examination whether a certain lesion is cancer or not. In the diagnosis between cancer and syphilis the therapeutic test is not certain, as any cancer of the mouth may for a time improve under iodides along with more careful hygiene of the mouth and avoidance of irritating food and milk, and a patient may for a time lose his pain under iodides, just as he may under the X-rays.

Cancer of the tongue may appear under the following guises: (a) A hard-edged ulcer; (b) A warty or papillomatous projection; (c) An indurated plaque; (d) A bossy or nodular induration; (e) The affected tongue may slowly and steadily shrink, just as the breast does in atrophic cancer. The glands may become affected before any ulceration occurs. The age of the patient does not afford the slightest help in diagnosis.

J. Hutchinson, jun. (*op. cit.*) also says that the text-book account, with its table of symptoms, has exercised a most pernicious effect; he says the most distinctive signs of cancer compared with syphilis are: (a) The *site*—gummatous ulcers being frequent on the palate, the back of the pharynx, and the dorsum of the tongue; they are rare on the free border of the lips, the sides of the tongue, and the floor of the mouth, where epithelial cancer is common. If an ulcer exist, the induration and projection of its edge is greatest in cancer; the "wash leather" slough of a breaking-down gumma is very characteristic, but he has seen it simulated perfectly in a septic cancerous ulcer. In a doubtful ulcer shooting pain is a symptom of the gravest suspicion. Scraping the floor of an ulcer is of undoubted value, but it must be done with care. First cleanse the ulcer of all discharge and extraneous matter, then scrape and stain scrapings with methyl violet or blue, and examine with a medium power in glycerin or distilled water. If the ulcer is syphilitic, tuberculous, or "dental," the scraping will remove but little epithelium, and that of the ordinary squamous type with small nuclei. If the ulcer be cancerous, modified epithelium of rounded or oval form with large, often multiple nuclei will be freely present; occasionally cell nests can be detected. With regard to glands being infected, it is most important in treatment, but it is liable to be over-rated in diagnosis; in fact the surgeon should make a diagnosis irrespective of the presence of enlarged glands. Far

too much has been made in the text-books, of diagnosing epithelioma of the mouth by the presence of hard, swollen glands in the neck. "*To expect these enlarged glands in every case of cancer of the mouth when it first comes under care is folly ; to delay operative treatment until they can be easily felt is a crime.*" The earliest glandular deposits of cancer in the axilla or the neck cannot possibly be recognised before operation.

Leucoplakia often turns cancerous, and it is wise to excise any suspicious-looking ulcer or papillomata, and at the same time remove the white patches with scissors.

Butlin² says, in small "irritation" ulcers removal of the cause of irritation and a simple lotion should produce marked improvement in a week, sufficient to justify a continuance of the treatment ; if, on the other hand, it increases, remove it. In cases where there is evidence of past syphilis, or a history of syphilis, even if the ulcer looks syphilitic but might be carcinoma, remove a piece for microscopical examination ; if this is negative, place the patient on strict regimen and treatment, and if within a fortnight of this and of the removal of any obvious cause of irritation the disease is not decidedly improving, it should be at once removed. How many lives might have been saved if this rule had been observed ! He gives four cases where tuberculous ulcers were mistaken for carcinoma and removed ; but if the ulcer is removed first, and the glands afterwards at the second operation, the diagnosis will have been made before the glands have been removed, and removal of the ulcer is the best treatment for tuberculous ulcer.

Jacobson³ enumerates the pre-cancerous conditions of the tongue as : (a) Bald tongue ; (b) Ulcers, cracks, fissures (57 per cent of these, like other pre-cancerous conditions, have been due to syphilis) ; (c) Leucoplakia or leucoma ; (d) Warts ; (e) Old persistent glossitis with numerous sulci and chronic enlargement of the tongue. Of these the two which give rise to most difficulty in the diagnosis of cancer are the ulcer, whether it be cancerous or pre-cancerous, and a leucoma becoming warty or lumpy. In an ulcer in a man of forty which has remained unhealed for four or five weeks, if it has been and is likely to be constantly subjected to the usual irritation (tobacco, alcohol, etc.), and especially if the patient be of hospital rank, he advises operation. He says a simple ulcer never has hard edges ; but an epitheliomatous ulcer may have soft ones. In suspicious cases the microscope cannot be relied on, as the malignant

disease may be extremely limited : therefore operate when in doubt, and operate early. These lessons are from fifty cases of operation for carcinoma of the tongue, and Jacobson says as regards the methods of operating he is only familiar with two. viz., Whitehead's intra-buccal, and Prof. Syme's operation through the floor of the mouth. Increasing experience confirms in his mind the value of Whitehead's method. The only two additions he makes are Catheart's method of securing the lingual arteries, and a laryngotomy in certain cases. If the floor of the mouth be involved, the jaw must be divided, and it can afterwards be wired. The laryngotomy tube he removes at the end of the operation. As to removal of only one half of the tongue, he thinks very few, if any, cases are suited to this. He advises removal of the glands as a matter of routine in every case, two to four weeks after the primary operation. There are three groups to be removed, viz., sub-mental, sub-maxillary, and deep cervical. These should be exposed by the following incisions : One along the whole length of the anterior border of the sternum : and a second from a point just below the chin to the level of the hyoid bone, and thence across the anterior triangle to the first incision. Two flaps are thus dissected up ; one above with its base along the mandible, the other below will have its base attached along the middle line of the neck from the hyoid bone to the sternum. The sub-mental group is often overlooked. The deep cervical group should be removed from their highest accessible point at the angle of the jaw down to the sternum.

With regard to operating on infected glands at a later date, *i.e.*, some time after the operation on the tongue, Jacobson gives the following advice : (a) It is no good operating when the glands are involved under the upper third of the sterno-mastoid, reaching to the mastoid process behind and the angle of the jaw in front ; it is difficult to operate, and he believes when these glands are affected those in the pterygoid region are involved also ; (b) Operation will be futile when any of the infected glands are soft, necrotic, and breaking down, and when both anterior triangles contain enlarged glands. The sub-maxillary salivary glands should be removed with the other glands.

Mr. Walter Whitehead⁴ describes his operation. He does not believe in division of the jaw, preliminary ligature of the linguals, nor in preliminary tracheotomy. The *écraseur* he thinks ought to be abolished. In the first place the position of the patient's head is a matter of the greatest importance. No operating table

is so good as an ordinary high-backed rocking-chair. Mr. Alex. Wilson and Mr. Whitehead devised the following method of securing the patient in the chair: An ordinary roller or "Jack" towel is used to secure the patient to the rocking-chair

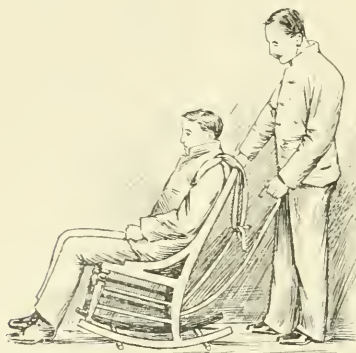


Fig. 31.—Method of fixing the roller towel.

(Fig. 31). A loop of the towel is first of all placed in the nape of the neck behind the head of the patient by some one standing in front. The sides of the towel are then placed under the arms of the patient, and the remainder of the towel collected behind the chair and passed through the loop behind the patient's head. The towel is then pulled taut and passed over the back of the chair, and immediately before the operation is commenced, and when the chair has been elevated for the purpose, the towel is firmly secured to the cross-bar below the seat. The desired elevation of the chair is secured by wedging two lengths of wood beneath the rockers, one in front and one behind. The position of these wedges can be instantly changed by the foot of the operator in front or by the assistant behind the chair (Fig. 33).

The assistant who administers the anæsthetic not only regulates the elevation of the chair, but he also manipulates the position of the patient's head during the different stages of the operation. The details of the operation itself are:—

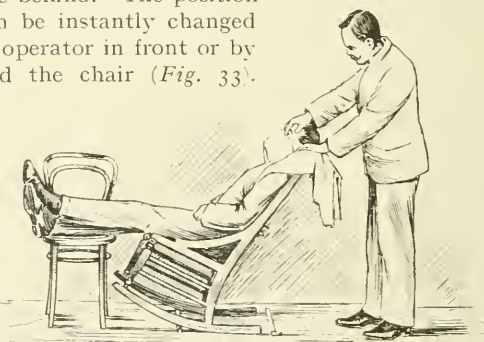


Fig. 32.—Position of patient when receiving anæsthetic.

(a,) When the patient is narcotised, gag the mouth on the

opposite side to the one intended to be operated upon; use a gag on both sides if the whole tongue is to be removed.

(b.) Seize the tongue with a pair of forceps; pull it forwards, and when it is in this position pass through it a strong ligature for the purpose of forward and upward traction during the operation. This is a most important matter, as the traction not only controls to a large extent the main arteries, but makes all the subsequent stages of the operation much easier.

(c.) With this ligature in his left hand, the operator draws the tongue forwards and upwards to the fullest extent, and commences the excision by freely dividing the frænum by means of a pair of scissors. The lower blade of the scissors is slipped under the mucous membrane on one side of the tongue, and run along this side as far back as the anterior pillar of the fauces; by closing the scissors the attachment of the mucous membrane to the jaw is severed. After dividing the anterior pillar of the fauces, he finally liberates the lateral attachments. As a rule, after dividing the frænum, a finger can be easily run under the mucous membrane and be made to act as a guide to the scissors. The same proceeding is repeated on the other side when the whole tongue is going



Fig. 33.—Position of patient when being operated upon.

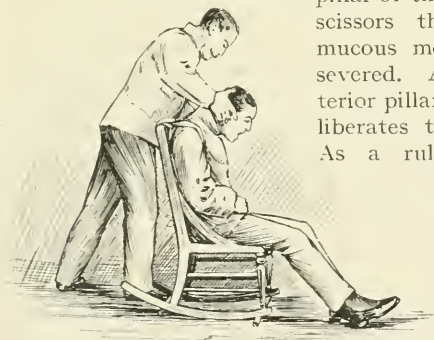


Fig. 34.—Position of patient's head when it is necessary to clear the mouth of any blood.

to be excised. If these incisions be completely accomplished it will be found that nearly the whole of the tongue can be pulled out of the mouth, making the remainder of the operation almost extra-oral.

Having proceeded thus far, the timid surgeon need make no further use of a cutting instrument—the tissues can be ruthlessly broken down and torn asunder. With a dry dissector he can break down the remainder of the friable tongue, and expose the arteries and nerves as cleanly as if he were making a dissection. Nothing is then easier than seizing each artery separately by forceps, snipping the distal end, and gently twisting the stump of the vessel. Having twisted each artery, place a loop of a strong ligature through the under and attached part or stump of the tongue to prevent the stump falling back when the tongue is finally removed. The final separation may



Fig. 35.—Patient thrown back into horizontal position should indications of syncope arise.

be completed by either snipping through the remaining muscular fibres, or deliberately twisting the stump until the tongue becomes completely detached. After all bleeding vessels have been twisted he applies a varnish to the floor of the mouth. The varnish is **Friar's Balsam**, in which the spirit is replaced by a saturated ethereal solution of **Iodoform**, adding one volume in ten of **Turpentine**.

As an ordinary routine it is desirable to prop the patient up in bed and prevent his reclining during the first night. The next day he should be encouraged to get out of bed and sit up; and on the second day, if the weather is congenial, the patient may get out. Only strong, blunt-ended scissors need be used. He believes in thorough removal of the disease, and has excised portions of the carotid and jugular veins without any disadvantage, and also practised removal of the whole of the sternomastoid. He has done 116 operations with only 3 deaths, a

mortality of 2·5 per cent. He has cases of ten, thirteen, and fourteen years without recurrence.

Carless⁵ suggests **Transhyoid Pharyngotomy**, (Valles' operation) in cases where cancer is limited to the base of the tongue. He has done two and seen one other case of this operation, and it has given good results. Cancer in this situation is very uncommon, but this operation gives very good access; better than lateral pharyngotomy or subhyoid pharyngotomy.

As regards results, these are not so good as one would have thought. Stanley Boyd and W. H. Unwin⁶ have collected 34 cases, in 27 of which some part of the tongue other than the frænum was the primary seat of the disease; in 7 the frænum seemed to be first affected. Out of 33 primary cases (26 tongue, 7 frænal)

- 1 is free from cancer after eleven years.
- 1 is free from one cancer after eight and a quarter years, and from another after two and a quarter years.
- 2 died from cancer after six years and four and a quarter years.
- 1 (frænal) is free after two and a quarter years.
- 1 is free after eleven months.
- 1 recurred in a low gland after four and three-quarter years.
- 1 recurred *in loco* (frænal) after three and a quarter years.
- 1 recurred twice in glands during the first two years, and these remained free from local or cervical recurrence till death at four and a quarter years.
- 16 others recurred within a year: 8 died.
- 5 died in direct relation to the operation, though possibly not all from it.

He appears to have used Kocher's operation or a modification of it rather than Whitehead's. All are agreed that the glands should be removed, and removed widely; if adherent to muscle, or veins, or vessels, the adherent portion should be excised.

REFERENCES.—¹*Pract.* May, 1903; ²*Op. cit.* and *Brit. Med. Jour.* Feb. 14, 1903; ³*Op. cit.* May and June, 1903; ⁴*Op. cit.*; ⁵*Op. cit.*; ⁶*Op. cit.*

TONSILS, (Disease of).

H. Lambert Lack, M.D., F.R.C.S.

Peritonsillar Abscess.—Barstow¹ discusses the development and functions of the tonsil. He considers that the tonsil has obviously some function, and that therefore its complete removal is unwise. He considers that the peritonsillar abscess commences in the supra-tonsillar fossa described by His, which lies at the apex formed by the junction of the anterior and posterior pillars

of the fauces, above and to the outer side of the tonsil. He recommends that in cases of recurring quinsy this fossa should be widely opened by slitting through the junction between the anterior pillar of the fauces and the tonsil, and then removing by punch forceps or other means the upper half of the tonsil.

Havilland Hall² and Lyons³ each report a case of death following a peritonsillar abscess. In both the abscess had burst, and a large amount of pus had got into the upper part of the larynx, producing asphyxia. Such accidents are rare, but they emphasise the importance of early incision in cases of suppurative peri-tonsillitis.

REFERENCES.—¹*Med. Rec.* April 19, 1902 ; ²*Lancet*, Sept. 27, 1902 ; ³*Ibid*, Sept. 20, 1902.

TRICHIASIS. (See "Eyelids.")

TUBERCULOSIS, (Surgical). *Priestley Leech, M.D., F.R.C.S.*

Tubby¹ has an article on the urban hospital treatment of surgical tuberculosis, understanding by this, tuberculous disease of the bones, joints, glands, and skin. The main object of a hospital is to cure, but many of these cases are simply relieved, and come back time after time with relapses, and very often die of general tuberculosis. What else can be expected when the children return to insanitary houses and insufficient food ? By thorough treatment these cases might be cured. By thorough treatment is meant removal of the child to a hospital in the country or the seaside, where he could be kept until he is cured, or until it is seen that the disease has such a hold upon him that no cure can be expected. By the present methods of treatment the child becomes dangerous to others, as he is not cured, and may disseminate the disease, and it is also an extravagant method of treatment, as beds are occupied by cases which are sent out relieved and not cured. He suggests that each children's hospital should have a branch establishment at the seaside or country, to which all cases of surgical tuberculosis should be sent. The results would doubtless be better, and in the long run this kind of treatment would prove more economical than that pursued at present.

Rushton Parker² enters a plea for the removal of tuberculous glands ; he has done over 300 operations during the last thirty years. There were two deaths from operation ; one from secondary hæmorrhage from the internal jugular vein, and one twenty days after operation from bronchitis and cardiac failure ;

four of the cases died from phthisis. He warns surgeons not to expect too much from scraping and scooping, as other caseous glands are left beneath which afterwards give trouble. He draws attention to a paper by Milton,³ of Cairo, dealing with 1000 operations done by him.

Dr. Galloway,⁴ of Toronto, draws attention to the want of general treatment of surgical tuberculosis. At Toronto Orthopædic Hospital some experiments were made on the treatment of tuberculous bone and joint diseases in tents. Forty-nine different cases were so treated, and although no accurate records have been kept, the conclusion arrived at has been emphatically and enthusiastically favourable to tent life. The general condition of the patient first begins to show improvement, and the improvement in the local conditions shows itself more slowly. The surgeon should not forget when an individual with tuberculous disease of a joint consults him, that the patient is suffering from tuberculosis, and that he requires treatment for that in addition to any special surgical treatment.

Claude Riviere⁵ reports three cases of perforation of the œsophagus by tuberculous glands, with a necropsy in each case. In all the cases it was the gland or glands situated below the bifurcation of the trachea which caused the trouble, and the amount of abdominal tuberculosis was a striking feature. In one there were tuberculous ulcers in the stomach, a very rare condition; in all three there were intestinal tuberculous ulceration and caseous mesenteric glands, and in two the retro-peritoneal glands were also caseous.

C. N. Dowd,⁶ of New York, records nine cases of tuberculosis of the femoral, inguinal, and iliac glands following foot wounds, in four years. In only two was there anything in the family history which indicated the source of the infection; in one of these the father had phthisis, and in the other the mother had a chronic cough, and she dressed the foot. All the children were accustomed to go barefoot, and all lived in tenement houses. In all the nine cases but two, there were distinct histories of sluggish foot wounds; in one instance the ulcer was excised and found to be tuberculous. The duration of the primary sore on the foot varied from less than a month to about eight months. The femoral glands in Scarpa's triangle were regularly the first to become noticeably enlarged; the infection of the inguinal glands above Poupert's ligament followed, and then the glands within the pelvis along the external iliac vessels. In one case

the popliteal glands were noticeably involved in the inflammation, breaking down and forming an abscess. The process of healing is slow and tiresome. The prognosis is apparently good; in only one was there evidence of tuberculosis in other parts of the body. None of the patients showed swelling of the leg or other ill effects from the removal of the lymphatics. Removal of the glands within the pelvis was necessary in every instance but one.

For the removal of all three sets of glands the following operation was done: A vertical incision beginning just below the apex of Scarpa's triangle is carried upwards just above Poupart's ligament, where it is joined by a transverse incision which extends from the anterior superior iliac spine to the crest of the pubic bone. The femoral glands can be removed through the vertical incision, and the inguinal glands through the transverse incision. The aponeurosis of the external oblique may be divided just above Poupart's ligament. The fibres of the internal oblique and transversalis muscles and the transversalis fascia may be drawn up, as in the operation for the ligation of the external iliac artery, and their attachments divided as far as the ends of the incision, and access gained to the iliac fossa so that the greater part of the external iliac vessels can be explored and the accompanying lymph glands removed.

Tuberculous Arthritis.—The treatment of tuberculous arthritis in general is undergoing a change in the direction of more conservatism. Fewer planned excisions are done, and in hospital work at any rate, excisions of any joint are much less frequent than they were a decade ago.

F. J. Steward⁷ relates four typical cases and discusses the general treatment. The two great principles are **Rest** and (failing this and along with it) the **Eradication** of the disease. A great deal can be done by rest. He thinks that in early cases, except in acute tuberculous disease commencing in the bones, 90 per cent get well by rest alone. In the later stages of the disease, where considerable destruction has taken place in the joint and about the bones and ligaments, and where often a sinus is present, the question of rest must depend upon the joint that is affected.

In the hip joint a good deal can be obtained by rest, and if it gets well with rest the results are far better than after excision; in the latter case there is more movement, but the joint is liable to be flail-like, and the limb is not so useful to the patient.

In the knee, if there is displacement backwards of the tibia owing to destruction of the posterior crucial ligament, the disease may be cured, but the limb cannot be straightened except by operation. Where sinuses are present there is a mixed infection of pathogenic organisms, and then some operative treatment is necessary. By treatment is meant *prolonged* treatment. To be on the safe side, always keep these cases at rest by one means or another for eighteen months at least after all signs of disease have disappeared. After doing an operation, Steward has always made a practice of keeping the joint in plaster of Paris at least eighteen months after the operation wound has healed. The fear of these joints becoming stiff is much exaggerated. In the case of most joints it is sufficient to keep the joint at rest either by a splint or by plaster of Paris, preferably the latter, but in the knee and hip something special must be done in the shape of extension. The objects attained by extension are: it keeps the parts at rest; it prevents pressure taking place between the bony surfaces; and it allays muscular spasm, and so overcomes and prevents deformity. If in spite of rest, fixation, and extension of the joint for a full month the disease gets *worse*, operation should be considered.

At the annual meeting of the British Medical Association in 1903, Mr. G. A. Wright⁸ introduced a discussion on the "Treatment of Advanced Tuberculous Disease of the Knee-Joint." The majority favoured erosion in the young, in adults about an equal number were in favour of erosion and formal excision. The most popular incision was of horseshoe shape, with division of the patella or ligament; the patella was preserved by the majority, and there was a consensus of opinion in favour of preserving the crucial ligaments where possible. Opinion was equally divided as to the use of a tourniquet and of drainage. The prolonged use of a Thomas's knee-splint was considered of most value to prevent flexion. The great majority of those who practised erosion made no attempt to obtain a mobile joint afterwards.

Mr. Wright's practice was to operate if there were no improvement after three months; he very rarely performed excision at any age; he used the transverse incision, did not employ drainage unless there were sepsis, and used Thomas's splint for two years after operation to prevent flexion.

Carless⁹ says that it is universally admitted that in children excision should if possible be avoided; in adults it is a matter of

opinion whether an ankylosis produced by operation is any better than the result produced by a natural process of repair. Gibney¹⁰ is strongly of opinion that the ankylosis produced by operation is much the better one; the ankylosis following natural repair is often only partial, while tuberculous foci may be encapsuled and give rise to recurrent attacks of pain and swelling. Lucas-Championnière¹¹ reaches a similar conclusion, and reports 115 cases of excision of the knee without a single death.

Mencièrè of Reims¹² advises the intra-articular and interstitial injection of a solution of **Iodoform** in ether, and the injection into the centre of the epiphyses of **Liquid Carbolic Acid**. In the early stages he makes a small incision with a drill, and then introduces a tube-like metal protector, so that its lower end fits exactly into the bone, and liquid carbolic acid (90 per cent with 10 per cent of alcohol) is introduced through a pipette into the bone, and after a minute or two the wound is freely washed out with absolute alcohol. In the later stages he opens the joints freely, cures the epiphyses if need be, and applies carbolic acid, or he punctures them and instils the acid while the synovial membrane is washed freely over with the acid, and subsequently with alcohol.

König¹³ discusses the question of operative *versus* conservative treatment in diseases of the knee joint. Where the patients have to earn their own living, operation is better, in the hands of a careful surgeon; he lays stress on performing a bloodless operation, and only touching the wound with instruments.

Hip Joint.—There is not much new as to the treatment of tuberculous disease of this joint. Carless¹⁴ thinks excision is a most undesirable proceeding, and every effort should be made to avoid it. In many cases limited operations can be done with success. Where the acetabulum is seriously involved, and minor conservative measures do no good, and there is retention of discharges which are often septic, something must be done to provide free drainage. In some cases amputation may be best.

Bradford¹⁵ suggests operative (artificial) **Dislocation** of the head of the femur where there is tuberculous disease of the acetabulum; this prevents injurious pressure on the diseased surfaces. He thinks that many cases of hip disease which are unsuccessfully treated are those of primary disease of the acetabulum. He dislocated the head of the femur in three cases, where the disease of the acetabulum had been recognised by skiagrams. In all three cases the condition of the child was

desperate, and suggested amputation of the hip-joint. By retention of the head of the femur drainage is interfered with, unless and until the acetabulum is perforated and a pelvic abscess formed. He dislocated the head of the femur on to the dorsum ilii in these three cases, curetted the acetabulum, and touched it with strong carbolic acid, washing it off with alcohol; and a large celluloid drainage tube, about an inch in diameter, was inserted into the acetabulum through the wound. In all the cases the femur was kept in an adducted and flexed position by means of a plaster of Paris bandage, which included legs and thighs. Daily applications can be made through the drainage tube to the diseased acetabulum. The immediate results in all three operations were excellent. He suggests, after the acetabulum is better, and healthy granulations spring up, either attempting to reduce the head of the femur into the cavity, or correct the deformity by a sub-trochanteric osteotomy. In less advanced cases, an anterior incision and forward dislocation of the head of the femur may be useful.

Ankle Joint.—Mayo Collier¹⁶ thinks an anterior incision from the apex of one malleolus to that of the other malleolus is better than the lateral incisions, where the ankle is extensively diseased. The tendons and nerves at the point of division have a fine thread passed through them to more easily identify them at operation, when the two ends of each tendon and nerve are accurately joined together.

REFERENCES.—¹*Brit. Med. Jour.* Feb. 21, 1903; ²*Ibid.* Oct. 25, 1902; ³*St. Thos. Hosp. Rep.* 1888 (pub. in 1890); ⁴*Therap. Gaz.* July, 1902; ⁵*Brit. Med. Jour.* Jan. 24, 1903; ⁶*Ann. Surg.* May, 1903; ⁷*Clin. Jour.* March 14, 1903; ⁸*Brit. Med. Jour.* Aug. 8, 1903; ⁹*Pract.* Jan. 1903; ¹⁰*New York Med. Jour.* July 26, 1902; ¹¹*Jour. de Méd. et de Chir.* June 25, 1902; ¹²*Arch. Prov. de Chir.* Oct. 1, 1902; ¹³*Berl. klin. Woch.* March 3, 1903, *Brit. Med. Jour.* April 11, 1903; ¹⁴*Pract.* Jan. 1903; ¹⁵*Ann. Surg.* Oct. 1902; ¹⁶*Med. Press*, Oct. 29, 1902.

TUBERCULOSIS OF EAR. (See "Ear, Diseases of.")

TUBERCULOSIS OF FEMALE GENITAL ORGANS.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Chipman¹ gives an instructive summary of the discussion on this subject at the International Congress of Gynæcology and Obstetrics in Rome in 1902.

Frequency of occurrence.—Various statistics were quoted, but Chipman thinks that the most representative are those of von Hauseman, derived from the Hospital Am Friedrichshain at

Berlin. During a period of five and a half years 7,000 autopsies were made at this hospital, and of these 450, or 6·5 per cent, were of tuberculous women. Among these 450 cases the genitalia were tuberculous in 18, or in 4 per cent. In this matter the citations of different observers vary considerably, but the statement can be justly made that the genitalia are affected in from 4 to 6 per cent of women suffering from any form of tuberculosis. Faure affirms that in men this proportion is but 3 per cent. Of the organs themselves, the Fallopian tube is out of all proportion the most frequently affected, seldom the uterus, and extremely rarely the ovary.

PATHOLOGY.—Tuberculous lesions presuppose the presence of the tubercle bacillus; as conditions favourable to a nidus in which the bacillus may develop. Faure mentions hypoplasias, all chronic inflammatory processes, pyogenic and gonorrhœal, and especially the latter. We doubt whether gonorrhœa plays an important part, or any part, in such predisposition; of the cases of genital tuberculosis that we have met with, there was not one in which there was any evidence of antecedent gonorrhœa. The disease is commonly found between the ages of ten and thirty years. The bacilli themselves may reach the generative organs either: (1) Directly, by ascending through the vulvar orifice and vagina, or descending through the ostium abdominale of the Fallopian tube; or (2) Indirectly, through the lymphatic and blood streams.

(1.) *Directly*: In the ascending infection the organisms are introduced directly into the vagina at coitus, or by contaminated fingers or instruments. Much has been said from time to time about this direct infection: our belief is that it is quite exceptional, and in support of this belief we may adduce the relative frequency of genital tuberculosis among unmarried women. In the descending infection the organisms, either free or included in cells or caseous *débris*, enter the Fallopian tube from the peritoneal cavity.

(2.) *Indirectly*.

(a.) By the blood stream. According to Kleinhaus there are three facts which support this method of dissemination: (i) The existence of a genital tuberculosis consecutive to a pulmonary tuberculosis with no intermediate foci; (ii) The frequency of the localization of tuberculosis at the placental site; (iii) The transmissibility of the bacillus from the mother to the fœtus. To these three considerations Veit adds as a rider the following

fact: The frequency with which there occurs an acute, widespread, miliary tuberculosis subsequent to the existence of a single circumscribed focus.

(b,) By the lymphatics, the phenomena here being simply those of an infected wound. If the primary focus be in the upper two-thirds of the vagina or the cervix uteri, the hypogastric glands become in course affected, and tuberculous foci establish themselves near the most vulnerable segment of the genital tract—the Fallopian tube.

Primary Genital Tuberculosis.—Veit contends that a case can be pronounced to be of this character only when a complete and thorough autopsy has demonstrated the absence of tubercular lesions in any other part of the body except those regions (meninges, joints, and peritoneum) where the infection is necessarily secondary.

DIAGNOSIS.—Hitherto the unsatisfactory state of our knowledge of tuberculosis of the genitalia has been in part due to the difficulty of diagnosis arising from the absence of symptoms. In the words of Martin, “At the present time we do not possess any symptom or sign pathognomonic of tubercular infection of the genital organs; . . . the fact upon which the great majority of my patients insist is the absence of pain in the genital sphere.” The anamnesis may disclose significant facts in the shape of a suggestive family history, or account of some previous chronic trouble in the glands, lungs, bones, or joints. If associated with such a history we get a persistent uterine catarrh, a gradual thickening or increase in the size of the Fallopian tubes, a peritoneal reaction, ascitic or adhesive, not otherwise to be accounted for, suspicion of the nature of the condition cannot fail to be aroused. The methods recommended as most likely to lead to a correct diagnosis are the following:—

(1,) Microscopical examination of portions of tissue removed from any doubtful lesion of the vulva, vagina, or cervix uteri, or from the interior of the uterus by a curetting: a careful search to be made in every case not only for tubercles, with their characteristic histology, but also for the bacilli themselves. In tubercles, when the process of healing has begun, the organisms are few and indeed often absent.

(2,) Examination of the secretions from the uterus microscopically and by cultural and inoculation methods.

(3,) Careful bi-manual palpation at all times where the uterine

appendages are involved. When the appendage lesions are small and of doubtful character, some considerable importance is to be attached to the following points as indicative of early tuberculosis: (a) Beaded nodosities in the substance or on the surface of the utero-sacral ligaments; (b) Irregular nodes in the isthmic portion of the Fallopian tube (salpingitis isthmica nodosa); (c) Widespread adhesions about the Fallopian tubes, with small tendency, at least at first, to complete occlusion of the tubes themselves. In these ways a distinction from gonorrhœal salpingitis is to be drawn, a differentiation which in these cases is often of very great difficulty, and an approach to a diagnosis made.

(4.) General examination of the patient.

A blood-examination gives us no assistance in these cases, as we possess as yet no hæmatological sign of any value whatever.

TREATMENT.—Veit lays stress on the tendency of these conditions to spontaneous cure, provided that the resistance of the individual be not greatly impaired. Hence hygienic and prophylactic measures are specially important; the latter can be summed up in two phrases—a careful hygiene for the healthy, and a suitable segregation for the diseased. With regard to the question of operative interference, Veit holds that in primary genital tuberculosis operation is often justifiable: but in the treatment of secondary genital tuberculosis, or at least in the treatment of the infection localised to the genital organs, radical operation should constitute the exception, and general and local treatment the rule.

When operation is decided upon, he advocates the removal of uterus, tubes, and ovaries by the abdominal route; unless the disease be limited to the appendages of one side, in which case remove only the diseased segment.

Where there is an associated tubercular peritonitis, attempt at first general treatment. If there be no tendency to cure, and ample time have been given for the formation in the tissues of reactionary antitoxins, perform a cœliotomy, evacuating any fluid present: if the inner genitalia reveal the presence of foci of disease in their parenchyma, and not merely an implication of their peritoneal surfaces, remove them, even though there be tubercular foci in other regions of the body.

In the topical treatment of genital tuberculosis the first place belongs to **Iodoform**.

REFERENCE.—¹*Mont. Med. Jour.* Feb. 1903.

TUBERCULOSIS OF LARYNX. (*See "Larynx."*)**TUBERCULOSIS OF THE SKIN.***Norman Walker, M.D.*

Although the results of the past year have more firmly established **X-rays** and **Light Treatment** in their place as the best means of cure, yet there are many occasions when other methods must still be used, and even as adjuncts to newer remedies they ought still to be considered.

Manteucci¹ reports further favourable results of the application of **Formalin** in a series of cases. The diseased patch is made as aseptic on the surface as possible, scraped under local or general anæsthesia, and then treated with 4 per cent solution of formalin in glycerin. At first the formalin solution is dabbed on, but later it is applied as a soak in sterilized gauze for twenty-four hours, when complete mummification of the part takes place.

Woodcock² produced local improvement by injecting half-drop doses of **Coley's Fluid** into the advancing margin. The disease, however, recurred.

Crocker and Pernet³ tried injections of **T. R. Tuberculin** in six cases, and summarize their results as follows: "On the whole, T. R. tuberculin has only a restricted use in carefully selected cases as an adjuvant either before or after other procedures."

Chalmers Watson⁴ recommends the use of **Bone-Marrow**, which he considers produces a secretion of vital importance to the economy. He showed photographs of a case obviously improved, but not cured, where the above had been rubbed in as an ointment; the additional employment of spikes dipped in **Acid Nitrate of Mercury** no doubt largely helped the result.

Richter⁵ has modified Unna's original method by using toothpicks made of beechwood impregnated with **Liq. Stibii Chlorati** to penetrate the isolated lupus nodules, and allowing them to necrose out.

Licorish⁶ brings forward a method which has proved successful in his hands. The patch is painted daily with **Carbolic Acid**, bit by bit, the borders only if ulcerating, and the whole surface if not. After the central ulcerating parts have been made more healthy and all other parts have been painted, the whole is covered with **Iodoform Collodion** (2 grains to the drachm), and this coat is thickened daily for a few days, when treatment is suspended and the coating allowed to drop off.

Nicholson,⁷ in a case where there was a large patch of lupus vulgaris involving the side and sole of the foot, removed the

diseased skin by excision, clipped off the fat, allowed the lupoid piece to soak for a few minutes in a 1-40 hot **Carbolic Lotion**, and then replaced it. The result was successful, although the skin was blue and livid.

In *tuberculosis verrucosa cutis* Joseph and Trautmann⁸ recommend the use of a 30 per cent **Resorcin Paste**, which they say is caustic in action, but elective, acting principally upon the tuberculous tissue.

REFERENCES.—¹*Gaz. deg. Osped.* Sept. 21, 1902; ²*Brit. Med. Jour.* Oct. 25, 1902; ³*Ibid.*; ⁴*Amer. Jour. Cut. Dis.* May, 1903; ⁵*Jour. Amer. Med. Assoc.* Sept. 27, 1902; *Clin. Jour.* Oct. 29, 1902; ⁶*Therap. Gaz.* Jan. 1903; ⁷*Lancet*, Dec. 20, 1902; ⁸*Münch. Med. Woch.* March 25, 1902.

TUBERCULOUS PERITONITIS. (See "Peritonitis.")

TYPHOID AND TYPHUS FEVERS.

E. W. Goodall, M.D.

Plates XXVIII and XXIX show the rashes of these diseases. The rash of typhoid fever consists of small, pink spots, which are found in greatest numbers on the abdomen and chest, and fairly often on the back also; they occur less frequently on the extremities, and only exceptionally on the face; moreover, they are not found in these situations unless they are very abundant on the trunk. They usually make their appearance towards the end of the first week, and continue to come out, a few at a time, as long as the fever continues. Each spot has a duration of two to four days. The spots disappear entirely on pressure, and never become hæmorrhagic.

The rash of typhus fever makes its appearance on the fourth or fifth day of the disease, on the sides of the abdomen, in the axillæ and about the wrists. During the next two days it continues to come out over the rest of the skin, except that of the face, being most abundant on the trunk. After the third day it ceases to come out. In the first instance the rash consists of small red spots not unlike those of typhoid. At first these spots disappear on pressure, but after a day or two they only fade, and in another day or two a small petechial hæmorrhage appears in many of them. In addition to the spots, there is a dusky, indefinite mottling, the "subcuticular mottling." When at its height the rash has a dull, red colour, which was compared by the late Sir William Jenner to the colour of the juice of a ripe mulberry. The face is seldom affected, but the conjunctivæ are injected. In London, at any rate, typhus usually gets sent to the fever hospitals as typhoid, the eruptions in the early stages being a



(Ralph C. Richards, ad nat del.)

Typhoid Fever.

MEDICAL ANNUAL, 1904.

little alike. The rash in typhus is usually more profuse than that of typhoid. Other points to bear in mind are the petechiæ and subcuticular mottling, and the distribution.

Captain Le Hunte Cooper, R.A.M.C., has published¹ an interesting account of the outbreaks of enteric fever and dysentery at Harrismith, Orange River Colony, during 1901 and 1902. He discusses the causes of the prevalence of these diseases, and while admitting that the water-supply was not derived from absolutely pure sources, yet brings forward very good reasons for believing that contamination of the water was not the cause. He shows, however, that prior to the beginning of the epidemic the town of Harrismith and its vicinity had been allowed to get into a most insanitary condition, and especially that rubbish of all sorts, excreta, etc., had been allowed to accumulate to an alarming extent. There was a pest of flies, and dust storms were frequent. In his opinion, the chief factor in the spread of the diseases was the flies, which conveyed the infective particles from latrines, etc., to the food. The dust storms also acted in the same way. At any rate, measures were put into force which aimed at the destruction of the flies and the prevention of their breeding, the protection of excreta from flies, and the protection of all kinds of food from flies. The adoption of these measures was followed by a very marked diminution in the prevalence of both enteric fever and dysentery, and there were strong reasons for believing that the improvement was due to the means employed.

Hale White,² in a most instructive lecture on the diagnosis of typhoid fever, particularly emphasises the value of the spots and the blood-count. He relates three cases in which a diagnosis was made from the presence of a single, but typical, spot, even though in two of the patients the temperature was normal when the spot was observed. With regard to the blood-count, he states that in typhoid fever the number of white cells is very much diminished.

It is of considerable clinical importance to know how long the blood of a case of typhoid fever which gives a positive "Widal reaction," will retain its agglutinative power. It has been widely taught that this power commonly persists for several months and even years. Some observations by H. S. D. Browne and K. E. Crompton,³ therefore, directed to this point, are of much interest and value. These observers examined, some time after the attack, the serum of all the cases

of typhoid fever treated at St. Thomas's Hospital, from 1899 to 1901, which they were able to reach by letter. The sera were put to the same test as that to which they had been subjected in the original attack, and no cases were tested which had not previously given the standard positive Widal reaction at the time of attack, *i.e.*, absolute clumping and loss of motility in thirty minutes with a dilution of 1 in 50. None of the patients had suffered from any acute febrile disease in the interval. Sixty-eight cases in all were examined. Of these 2 were tested in from 1 to 6 months after the attack of typhoid fever, and 1 was found to be positive and 1 negative; 11 were tested in from 7 to 12 months after, 1 being positive and 10 negative; 15 in from 13 to 18 months, all with negative results; 17 in from 19 to 24 months, 2 being doubtfully positive and 15 negative; 7 in from 25 to 30 months, 9 in from 31 to 36 months, 4 in from 37 to 42 months, and 3 in from 43 to 48 months, and the whole of these were negative with one exception, namely, one of the cases which was tested in from 37 to 42 months after the attack. According, therefore, to these observers, in the blood examination of any given case, the fact that the patient has had a previous attack of typhoid fever need hardly be taken into account.

Alt and Lackner⁴ report 40 cases of typhoid fever which were treated with benzoyl-acetyl-peroxide (**Acetozone**) in doses of from $\frac{1}{2}$ gr. to 3 gr. every 1 to 3 hours, with apparently favourable results, only two of the cases proving fatal, or 5 per cent. As all the patients were under fourteen years of age, the average age being eight and three-quarter years, no very valid conclusion can be drawn from these cases, since the average mortality in patients under fifteen years of age is about 5 per cent. Somewhat more convincing are the cases reported by F. G. Harris (Cook County Hospital, U.S.A.).⁵ Harris treated 128 cases of all ages, with 11 deaths, a mortality of 8.5 per cent. Cases not treated with acetozone in the same hospital at the same time showed a mortality of 13.1 per cent. According to this observer, not only is recovery more frequent, but the duration of the illness is shorter in cases treated with acetozone.

The following is the method of making up the drug for administration: "The most satisfactory results are obtained from solutions made by adding 12 to 15 grains of the powdered acetozone . . . to the quart of hot water, ranging in temperature from 120° to 130° F. Stopper and shake the bottle



(Ralph C. Richards, aa nat del.)

Typhus Fever.

vigorously for from three to five minutes; at the end of this time a milky solution is obtained. . . . If allowed to stand fifteen or thirty minutes, the insoluble and inert substances settle to the bottom. It is not necessary to filter the solution in using it internally, simple decantation being sufficient. I prepared the solutions in one-half-gallon bottles, which were given to the head nurse of each ward. . . . This solution replaces water and all other liquids (except milk . . .), and the patients were not only allowed to drink it *ad libitum*, but urged to do so. In addition, the solution of acetozone as medicine is given in from 4- to 6-ounce doses every four hours, . . . with occasional small doses of sodium phosphate or magnesium sulphate." Sponging, wet-packs, and baths were also employed with cases of high temperature.

During the past year or so some important advances have been made towards obtaining a **Curative Serum** for this disease. Although it has been believed that the bacillus typhosus produced a very powerful toxin, yet attempts to isolate the toxin from the bacillus itself or from any of the media in which the bacillus was grown, have until recently been unsuccessful. Macfadyen, by trituration of the bacilli with fine silver sand and the subsequent use of a hydraulic press, was able to extract the toxin. But this method is not free from objection, because in the process heat is evolved, inducing chemical changes which would perhaps vitiate the results. Macfadyen, however, showed that the typhoid and other micro-organisms could be submitted to the action of liquid air at a temperature of about -190° C. for as long a period as six months without their vitality being destroyed. When at this temperature the bacilli are very brittle, and Macfadyen and Sydney Rowland were able by means of a mechanical contrivance, to disintegrate them. The disintegrated mass submitted to centrifugalisation yields an opalescent fluid, which in small doses is fatal to guinea-pigs. These observers then immunised monkeys by injecting at intervals of three to four days non-fatal doses of this fluid (typhoid plasma), 0.5 to 1 c.cm. After four to six weeks of this treatment, the serum of the monkey was found to have become anti-bacterial and anti-toxic as regards the typhoid bacillus. A simultaneous injection of sufficient quantities of the serum with the bacilli or the serum with lethal doses of typhoid plasma produced no lethal or toxic effects. It was further found that if lethal doses of typhoid bacilli and plasma were injected into guinea-pigs, and

that if before injecting the antitoxic monkey's serum, a period was allowed to elapse up to half of the period at the end of which death ensued in control animals, the guinea-pigs were protected from death; that is to say, within certain limits, the serum was curative as well as protective. Whether the serum will prove to be of value in typhoid fever remains to be proved.⁶

Baskett⁷ gives an account of three cases of typhoid fever treated with anti-typhoid serum. The dose is 10 c.c.m injected two or three times a day till some marked improvement is shown.

It is well known that venous thrombosis, especially femoral thrombosis, is met with sufficiently often to be noticeable after certain of the specific fevers, especially typhoid fever. According to A. E. Wright and H. H. G. Knapp,⁸ the blood during the febrile period of typhoid fever is considerably less coagulable than in health; while on the other hand, during the stage of convalescence from typhoid fever it is usually more readily coagulable than in health. Further, the amount of calcium salts available in the blood for the purposes of its coagulation, was found by these observers to be, in typhoid convalescents, on an average, about twice that of normal blood. Hence the suggestion arises that the increased coagulability during convalescence may depend upon the excess of lime salts.

On this supposition, with a view of diminishing the coagulability of the blood, a decalcifying agent, citric acid, was administered to seven patients who were convalescent from typhoid fever, in doses of 36 to 60 grains three times a day. In each instance "the exhibition of citric acid was followed by a decalcification of the blood and a corresponding diminution of its coagulability." In one of these cases, in which femoral thrombosis was present when the treatment was commenced, the symptoms were rapidly alleviated.

Wright and Knapp attribute the excess of lime salts in the blood of the convalescent from typhoid fever to an almost exclusively milk diet, to which the patients whose blood they examined were restricted. Cow's milk, they point out, contains 1 part in 600 of CaO as compared with 1 part in 800 contained in lime water. They suggest, therefore, that to effect a partial decalcification of the milk, from 20 to 40 grains of citrate of soda should be added to every pint of milk the patient takes. For the details of the methods employed to estimate the coagulability of, and the amount of lime salts present in, the

blood, the reader is referred to the original paper. The amount of calcium salts available for the purposes of blood coagulation (content in calcium salts), was appraised by noting the minimum concentration of ammonium oxalate required to keep the blood fluid. With respect to this method and the inferences drawn from its results, the authors make the following statement: "Of importance in connection with the method of measuring the content of the blood in lime salts, is the fact that it comes out clearly . . . that a blood which contains less calcium salts than a control blood is not always less coagulable; nor, again, is a blood which contains more lime salts necessarily more coagulable than the control. The content of a blood in lime salts, as estimated by this method is, in fact, far from being an index of its coagulability." The efficacy of the treatment proposed must, therefore, be left to the decision of experience.

Laparotomy and Suture of the Intestine for Perforation. At a meeting of the Clinical Society, on Dec. 12th, 1902, Bowlby reported one case and Waring three cases of this operation which recovered.⁹ At the same meeting three fatal cases were also reported. Another case which recovered is published by Bently,¹⁰ and two more, also recoveries, by Hector Mackenzie.¹¹ It is difficult to be certain what proportion of the cases operated upon recover, as there can be little doubt that unsuccessful cases are not always published. Of all the cases, 21 in number, occurring in the Metropolitan Asylums Board's Hospitals, during the year 1902, two recovered.

REFERENCES.—¹*Lancet*, March 7, 1903; ²*Clin. Jour.*, Dec. 17, 1902; ³*Lancet*, June 27, 1903; ⁴*Therap. Gaz.*, Oct., 1902; ⁵*Ibid.*, March, 1903; ⁶*Brit. Med. Jour.*, March 21 & 28, 1903; ⁷*Ibid.*, Feb. 21, 1903; ⁸*Lancet*, Dec. 6, 1902; ⁹*Ibid.*, Dec. 20, 1902; ¹⁰*Ibid.*, Jan. 10, 1903; ¹¹*Ibid.*, Sept. 26, 1903.

TYPHOID SPINE.

Purves Stewart, M.A., M.D.

Since the first cases of this disease were reported by Gibney in 1889, a considerable number have been recorded, and their symptoms present a fair degree of uniformity. Ely,¹ who records a typical instance of the disease, is of opinion that it is commoner than is generally supposed. Although no case has ever come to autopsy, yet nine out of thirty have been followed by kyphosis, showing a probable destructive lesion. It is therefore incorrect to class the disease invariably as a pure neurosis, as Osler does. It appears to be almost certainly an osteitis, probably combined with a periostitis. In fact, Quinke,

who reported two cases in 1899, names the disease *spondylitis typhosa*. Lovett and Washington's case, which had hysterical stigmata, was regarded by them as a post-typhoid neurosis until the kyphosis developed, and this has also occurred in other instances. Twenty-six cases out of thirty have occurred in males, and no cause is known other than an antecedent attack of enteric fever. In a considerable proportion, however, the patients were accustomed to take severe muscular exercise, and this may have had an exciting influence. The chief symptoms are pain, weakness, rigidity, and stiffness in the back, with agonizing tonic spasms in the spinal muscles. Pain may also occur in the groin, abdomen, hip, or thigh. Local tenderness on pressure has been observed in the majority of cases. The symptoms thus closely resemble those of Pott's disease in the lumbar spine, but they all usually begin abruptly, and have the history of an antecedent attack of enteric fever. In three cases lateral curvature has been observed, and in nine kyphosis has supervened. The temperature sometimes becomes elevated to 101° F. or more, and sometimes it remains up for a time.

DIAGNOSIS is often difficult, but any case of a severe "lumbago" following typhoid fever should be regarded with extreme suspicion. If spasmodic attacks of pain occur, or muscular spasms and limitation of movements, especially with fever, the diagnosis is fairly secure. The reflexes are generally undisturbed, though sometimes the knee-jerks are exaggerated, and there is no sensory or motor paralysis of the limbs.

PROGNOSIS is good. All the patients recover, though in two or three instances relapses have occurred.

TREATMENT.—**Rest** is universally recommended (except by Osler, who regards the condition as functional), and the more complete the better. A plaster-of-Paris jacket may be required. The **Pacquin Cautery** has been found beneficial.

REFERENCE.—¹*Med. Rec.* Dec. 20, 1902.

URÆMIA. *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

The treatment of the various nervous phenomena of nephritis have been discussed by James M. Anders¹ in a lecture which may afford the basis for considering various contributions to this subject. While agreeing with the utility of milk diet in acute crises, he advocates a **Mixed Diet** as being generally more appropriate. He does not, however, go so far as to state with Hale White² and Ewart,³ that the subjects of chronic nephritis

may be fed with abundance of meat without harm resulting. The last considers, indeed, that full diet can only be given safely in cases of chronic anasarca which are being drained at the same time, and a flow of dropsical fluid maintained as a means of eliminating the waste products which the kidneys are not able to excrete. This condition limits the application of his method ; in the case Ewart publishes to support his views the dropsy persisted for six months, and as apparently it and the drainage were still being maintained, it might be fairly argued that under different treatment a more satisfactory result would have been arrived at in the time.

It is somewhat humiliating to notice how difficult it is to arrive at finality in the question of treatment. The general experience of the profession is undoubtedly on the side of those who hold that in chronic Bright's disease, especially chronic Bright's disease with anasarca, the diet should be light and contain a minimum amount of nitrogen. It is true that in many cases of chronic nephritis, where active inflammation has subsided and the nitrogenous excreting power of the kidney has been regained, or (as in many cases of granular kidney) has never been lost, it is quite unnecessary to forbid meat, although it may be wise to limit its use to moderate but sufficient quantities. I showed many years ago⁴ that while the addition of meat to the diet in chronic parenchymatous nephritis causes a marked increase in the albuminuria, yet if we take the amount of albumin excreted after each meal, the urine after dinner at which meat is eaten may show less albumin than that after a breakfast of bread and butter. This shows that there are other factors which determine the amount of albumin besides the diet ; of these the most important is the functional activity of the kidney at certain times in the day. This is always greatest in the forenoon, so that after a breakfast of bread and butter, milk, and tea the amount of albumin is greater than after a dinner of meat and potatoes, although the total quantity of albumin rises steadily under the influence of the meat diet, being three times greater on the fourth day than on the first, the patient having previously lived on a diet free from meat. The guide to diet should be the capacity of the kidney to eliminate nitrogen ; if the excretion of urea is normal or about normal, 4 to 6 oz. of meat may be permitted once a day.

Where butchers' meat is not permissible, **Fish** can often be borne. In a recent article Daremberg and Moriez⁵ go so far as

to credit fish with the power of *diminishing* albuminuria. They lay stress upon the importance of the fish being fresh. They were led to experiment with fish by observing a case in which the albuminuria doubled when they replaced fish by chicken and brains. They subsequently made further clinical experiments, and satisfied themselves that fish taken two or three times a week at the mid-day meal was followed by the disappearance of the albuminuria, or at least its considerable diminution. These statements undoubtedly require confirmation, but the value and comparative harmlessness of white fish as an article of diet in chronic Bright's disease has been well established by experience. Prof. von Noorden,⁶ who has been ridiculing the supposed orthodox direction to feed the subjects of Bright's disease on white meat only, and who states that the meat of chickens and Ostend rabbits sometimes contains a larger quantity of extractives than beef, recognizes the value of fish. In acute nephritis, von Noorden advocates the use of the following diet: Milk, 5 oz.; cream, 12½ oz.; rice, 2 oz.; rusk, 2 oz.; butter, 2 oz.; sugar, ⅔ oz. This does not seem very well arranged, as the quantity of fat in the shape of cream and butter is too large in proportion to the rusk and rice with which they must be eaten. There seems no reason for giving such a small quantity of carbohydrate food; the milk and the rice might be largely increased with advantage.

Anders recognizes the use of **Purgatives** and **Diaphoretics**, but for the latter purpose he recommends the **Hot Wet Pack**. He also employs **Diuretics**, but quotes with approval Osler's maxim that pure water is the best diuretic. He testifies to the utility of **Dry Cupping**, an old-fashioned remedy which should not be lost sight of, but the most important means upon which he relies in uræmia is **Bleeding**; in fact, he goes so far as to give the rule, "When in doubt, bleed." Marsden,⁷ in an excellent paper on the value of venesection in acute nephritis, while adducing strong evidence of its utility in cases where the venous system and the right side of the heart are engorged, is not equally convinced of its value in uræmia. He points out that there are good theoretical grounds for doubting the efficacy of bleeding to remove a poison from the blood; any good that may result is probably due to the mechanical effect of unloading the congested right side of the heart.

Experience may be quoted for and against bleeding. In the uræmia of acute nephritis recovery almost invariably results,

and the only remedies needed are a smart **Purgative** and a **Hot-air Bath**; in chronic nephritis, on the other hand, uræmia may be a terminal condition associated with such a complete break-down of the heart as well as the kidneys, that all remedies are likely to be ineffectual. The reputation of bleeding as a remedy is mainly based upon its success in puerperal convulsions, where the state of the kidney is very different from that of either of the two preceding instances. Bleeding, therefore, should not be regarded as a routine remedy, but one which should have its place in the mind of every practitioner.

As heart stimulants Anders recommends **Digitalis**, **Strychnine**, **Strophanthus**, and hypodermic injections of **Camphor**. He gives no further indications for the use of the last remedy, nor does he mention the dose he employs. At one time camphor was used hypodermically as a hypnotic, but it seems to have gone out of fashion. He is in favour of intravenous infusion of normal **Saline Solution**, for which he thinks the most favourable opportunity is after venesection, as it may be expected to make up for the loss of fluid, and dilute the poison remaining in the blood. He does not mention clysters or subcutaneous injections of normal saline solution, although good results have been observed to follow their use.

He speaks somewhat doubtfully of the value of hypodermic injections of **Morphia**. This vexed question has been the subject of an enquiry by the editor of the *Therapeutic Gazette*.⁸ The late Dr. Loomis is generally credited with having recommended the use of morphia hypodermically in the treatment of uræmic convulsions, but Sir Stephen Mackenzie carried this further, and advocated its employment in uræmic delirium, while Osler has recommended it in uræmic dyspnœa. In reply to editorial enquiries, Prof. Tyson stated that Dr. Loomis had distinctly announced and stated to him personally, that only cases of uræmia from acute parenchymatous nephritis are benefited by this treatment, and Prof. Tyson is of opinion that morphia in chronic interstitial nephritis is a dangerous remedy. Dr. Hale White believes that patients with Bright's disease are easily poisoned by morphia, and that the drug should not be given unless it seems absolutely necessary; he would try to restrain convulsions by **Chloroform** in preference. Dr. W. Ewart would not hesitate to use hypodermic injections of morphia for uræmic convulsions, where for any reason chloroform inhalations could not be employed. Dr. Frank Billings thinks morphia

hypoërmically in the treatment of uræmic convulsions is of great value where there is dilatation of the heart and a tendency to œdema of the lungs, but he would give only $\frac{1}{2}$ of a grain, and not repeat it within an hour; Dr. John H. Musser has had very limited experience of its use in uræmic convulsions, but speaks highly of it in uræmic asthma.

Finally, Anders speaks of **Chloroform Inhalations** as a ready and quick means of treating uræmic convulsions. Undoubtedly this is the readiest and safest means by which this symptom can be controlled.

REFERENCES.—¹*Therap. Gaz.* Nov. 1902; ²*Med.-Chir. Trans.* vol. lxxvi; ³*Med. Press*, April, 1902; ⁴*Brit. Med. Jour.* June 5, 1880; ⁵*La Sém. Méd.* 1903; ⁶*Brit. Med. Jour.* Nov. 1902; *Inter. Med. Mag.* Dec. 1902; *Ibid.* Jan. 1903; *Ibid.* Sept. 1902; ⁷*Med. Chron.* Oct. 1902; ⁸*Therap. Gaz.* Jan. 1903.

URINE, (The). *Prof. R. Saundby, M.D., M.Sc., LL.D., F.R.C.P.*

Cryoscopy.—The determination of the freezing point of fluids is a method of physical investigation which has of late years been applied to the blood, urine, and other physiological and pathological fluids, in the hope of obtaining data which should prove of use in clinical work. (See "Kidney, surgical diseases of.")

Bence-Jones' Albumin.—It has unfortunately become the fashion to speak of Bence-Jones' albumin as "albumose," although the more the nature of this proteid is studied, the greater probability there is in the view that it is really an albumin. As is well known, Bence-Jones' albumin does not give the ordinary reactions of albumose, and more especially it does not give the characteristic pink colour with Fehling's solution. According to L. N. Boston,¹ it gives a characteristic reaction with lead acetate and caustic soda. The method of applying the test is as follows: 15 to 20 c.cs. of filtered urine are placed in a test tube to which an equal quantity of solution of sodium chloride is added, and the tube shaken. To this 2 or 3 c.cs. of 30 per cent solution of caustic soda are added, shaking vigorously. The upper fourth of this column of liquid is heated to boiling point, when a 10 per cent solution of lead acetate is added drop by drop, the upper stratum of the liquid being boiled after each additional drop. After boiling for half a minute to a minute, the upper stratum becomes brown and then dull black, and this black precipitate falls to the bottom of the tube as a coarsely granular pigment. It is this formation of black pigment which is so characteristic of Bence-Jones' albumin. Further cases

of multiple myeloma associated with Bence-Jones' albumin have been published by Parkes-Weber,² T. R. Bradshaw,³ Charles E. Simon,⁴ L. Napoleon Boston,⁵ and James Anders,⁶ so that the association between the two may be regarded as definitely established.

Albuminuria.—A contribution to the effect of exercise in occasionally producing albuminuria in healthy persons comes from Australia in the shape of a paper by T. P. Dunhill and S. W. Patterson,⁷ who give the results of the examination of a number of young men engaged in training for boat races, but these do not differ from those which have been previously published. W. E. Huger,⁸ in a paper on cyclic albuminuria, lays stress upon position as the real cause of the albuminuria, although he thinks that some cases so classed may really be due to inflammatory disease. The cases upon which his paper is based would not, however, generally be called cyclic albuminuria, as that name is properly restricted to those which, while presenting no other signs of Bright's disease, are characterized by the peculiarity that the albumin is entirely absent from the urine passed on rising, and reaches its maximum a few hours after the patient has been going about. It is now also generally recognised that "orthostatic albuminuria" is a term that more correctly represents the causation of the disease. It has been long known that the albuminuria of Bright's disease is increased by the patient getting up and going about, although it is rarely entirely absent from the early morning urine. Huger also thinks that casts would more often be found if they were looked for very carefully. It should be remembered that the introduction of the centrifuge necessitates some modification of our clinical rules, although in Moxon's original paper he admitted that in the urine of these cases one or two hyaline casts may occasionally be found. The discovery of one or two hyaline casts, even when albuminuria is also present, especially if they have been found only by the centrifuge, is not inconsistent with the diagnosis of functional disease, although it may make it desirable to wait before expressing a definite opinion; and at the same time it may be well to see what deposit occurs in a conical glass, and whether or not any casts can be found in it. Hyaline casts were found in the urine of the famous pedestrian Weston during his prolonged walk, and have often been seen in the urine of jaundice, heart disease, and diabetes, where at the most the kidneys were only passively congested;

but according to Craandyk⁹ the centrifuge finds casts much more often; in 109 samples of albumin-free urine he found hyaline casts in 20. Of these 14 were cases of phthisis, one a case of chronic alcoholism, one melancholia, one had had glycosuria, another post-influenzal phlebitis and renal colic, two were patients who had recovered from tuberculosis, two were healthy subjects, and two were of unknown origin. The casts were always scanty and for the most part hyaline, but in about a fourth of the number granular casts were also present. Glaeser, a pupil of Von Jaksch, found casts and leucocytes without albumin in 30 out of 106 specimens of urine derived from apparently healthy middle-aged men, and he attributes this to the effect of alcohol, which was consumed in greater or less quantities by all of these persons. Kossler had an opportunity of examining the kidneys microscopically in six cases where there had been casts without albuminuria, and states that the changes were limited to certain parts of the tubes, the interstitial tissue and glomeruli being normal. It is evident that the centrifuge finds too much, and that its results are misleading; this should be borne in mind in considering the value of the reports sent out from clinical research laboratories, where the centrifuge is invariably used to determine the deposits from the urines submitted for examination.

Much the same result occurred a few years ago, when many new and highly sensitive tests were invented for the presence of albumin in the urine, which L. Napoleon Boston¹⁰ of Philadelphia, seems to wish to revive, by the description he has given of them in a recent paper. He suggests a modification of the ordinary method of applying the cold nitric acid test. He first fills a pipette with an inch or inch and a half of urine, and then having wiped the ends, puts it into a bottle of pure nitric acid, so as to draw up about an equal quantity of the acid; he then holds up the pipette and observes any ring that may be formed at the point of contact between the two liquids. The method seems to be open to the obvious disadvantage that the nitric acid from the pipette may very easily drop upon the operator's clothes or carpet, and the suggested advantage that it requires a smaller quantity of the reagent, is not of great weight. On the whole, boiling the upper half of a column of urine with dilute acetic acid is the best routine test.

Tretrop¹¹ has recommended the use of a 40 per cent solution of formalin instead of acetic acid, but the value of this has yet

to be determined. Dr. Walter Smith¹² has pointed out that formalin yields with urea a white precipitate, which must be a source of fallacy in looking for albumin. It should never be forgotten that a test one is in the habit of using constantly, is far more likely to give trustworthy results to the operator than any new method. If we wish to try a new test, it ought to be used side by side with the old one, and the results compared; if after sufficient experience it proves to have advantages, it may be adopted, but many practitioners have not the time to carry out such investigations.

Prof. Aschoff¹³ has afforded additional proof of what no clinical physician doubted, that the albumin found in the urine of Bright's disease is derived from the blood, although the method employed by him is novel and interesting if not original. It is based upon the fact that as a result of the injection of various proteids into the bodies of animals, substances are formed in the blood which are capable of precipitating *in vitro* solutions of the proteid originally used for injection. The substances possessing this property are called "precipitins"; for example, an animal previously treated with ordinary milk, yields a serum which precipitates milk casein, and similarly precipitins have been obtained for egg albumin, globulin, peptone, and for the albumin present in the urine. The serum of animals treated with albuminous urine precipitates the albumin present in fresh samples of urine. The recent experiments of Mertens¹⁴ appeared to furnish a conclusive proof that the albumin in nephritic urine is derived from the blood, but as he did not at the same time test whether the precipitate could have been obtained by the injection of the proteid constituents of the kidney epithelium, Aschoff thought it desirable to repeat his experiments with this test. He found that injections of human kidney substance cause no precipitate, and so far as they go these results confirm the view, otherwise not doubtful, that the albumin is derived from the blood.

A more practical question is that raised by Dr. Lambert,¹⁵ in a paper read before the New York County Medical Society, on the prognostic significance of albumin in the urine. He said that he had been engaged from 1868 to 1888 in examining the urine of applicants for life assurance, and by the rejection of persons found to have albuminuria, had been the means of saving enough money to the insurance company to pay the entire expenses of the medical department of New York city.

At the same time he admitted that albuminuria might be a temporary condition, and by no means necessarily implied severe or incurable organic disease of the kidney. He thought that the presence of tube casts was rather a cause of confusion than an aid to diagnosis, as they also were constantly found in persons otherwise healthy. In the discussion that followed, Dr. Vanderpoel said that if we took all the cases rejected for albuminuria during the last fifteen years, it was found that among them the percentage mortality was decidedly increased, there being four or five times as many dead per thousand as in an equal number of healthy lives, but if this group were subdivided, it was found that where the albumin was accompanied by casts the mortality was much greater than in those only presenting albuminuria. Dr. Symonds thought that it was necessary to distinguish nucleo-albumin from the other forms of albumin in life insurance work, because the presence of this form of albumin in a person otherwise healthy would have no significance, and yet it gave all the ordinary reactions of albumin except the contact test with nitric acid. He thought all albuminurics should be looked upon as unsound insurance risks.

On the other hand, Stokvis¹⁶ has protested against the indiscriminate rejection of candidates for life insurance on account of albuminuria. He has pointed out that in the first place extrarenal albuminuria is of no importance, yet can only be determined by microscopical examination of the sediment, by the discovery of blood, pus, epithelium, or shreds of mucus, by the absence of renal elements, and so forth; but even albuminuria of renal origin may be merely functional; this is, as a rule, temporary, yet renal albuminuria may be persistent without any serious indication or being accompanied by any disturbance of health. Each case should be judged upon its merits, and in the absence of polyuria, casts, cardiac hypertrophy, arterio-sclerosis, retinitis, uræmia, or œdema, where in fact the health is quite satisfactory and no other unfavourable symptom is present, it may be accepted after a period of probation. He alluded to the difficulty presented by albuminuria depending upon ascending infection from the bladder, or by commencing tubercular disease of the urinary tract, but he thought that cases of cyclical or postural albuminuria might be accepted.

Cystin.—Lewis and Simon¹⁷ of Baltimore, have recorded a case of pneumonia in a married woman aged forty-six, in which

a large amount of cystin was present in the urine during the attack. The urine had been examined several times before this illness without any cystin having been seen, and it disappeared on the fifth day of her illness. Another interesting point about the case is that they were able to demonstrate the presence of diamins by operating upon a large quantity of urine. The crystals obtained melted at 129° C. and therefore corresponded to cadaverin; putrescin was not found. This is the seventh case of cystinuria in which diamins have been demonstrated in the urine, and he believes that they may be always found if sufficient care and a sufficiently large quantity of urine are employed.

Leucin.—We are in the habit of thinking of leucin as a deposit only met with in the urine in destructive diseases of the liver, especially in acute yellow atrophy; so that the case published by Walter G. Smith,¹² of Dublin, in which a bulky sediment of this substance was found in the urine of a young lady, aged twenty-three, who enjoyed excellent health except from liability to attacks of hypogastric pain with frequent micturition, is of interest. The pain was worse after eating certain things, such as rhubarb and uncooked apples, or if she had had claret for dinner. The urine examined was acid, and free from albumin and sugar; it deposited a considerable white sediment about a third of an inch in depth, which resembled in appearance an ordinary phosphatic deposit, but under the microscope was entirely made up of spheroidal or discoidal bodies; and on careful examination, was found to include at least one leucin; tyrosin was not present. Dr. Smith refers to a paper by E. C. Anderson,¹⁸ who stated that he had detected leucin and tyrosin in the urines of a large number of cases representing most diverse conditions, and he expresses the opinion that leucin is probably present in small amount in the urine of most people, except those in the highest state of health, who lead temperate, active lives. Dr. Smith says he knows of no confirmation of this somewhat surprising statement; he does not know of any previously recorded case in which leucin has appeared as a sediment in bulk and unassociated with tyrosin. In conclusion, the author points out, in connection with the occasional practice of adding small quantities of formalin to urine in order to preserve it for examination, that formalin yields with urea a white precipitate (probably methylene-urea) which may easily be mistaken for leucin, and that such urine reduces copper, and also that the

presence of formalin interferes with the detection of small amounts of albumin by means of heat and acetic acid.

Bile Pigments.—Although the test for bile acids in the urine is undoubtedly very unsatisfactory, it is not generally considered that the ordinary means for detecting the presence of bile pigments are untrustworthy. The method recommended by me is to dilute the urine to the colour of pale sherry in a large glass, and to add to it either strong nitric acid or dilute tincture of iodine, looking for a green colour where the two layers of fluid come in contact. Mr. F. A. Monckton, of New Zealand,¹⁹ recommends the following method: He fills two test tubes three parts full of water; to one he adds a small quantity of methylene blue, to the other thirty-one drops of the suspected fluid; he trickles gently into the latter sufficient of the blue solution, usually about 20 or 30 drops, to give a light transparent blue tint, but in the presence of bile this tint becomes a delicate green. Dr. John W. Duncan,²⁰ of Birmingham, says that this test seems fairly reliable and rapid, but he finds that most of the methyl colours give similar reactions. Paul's test, a solution of methyl aniline violet, gives red; Löffler's blue gives green, and this latter vanishes on heating and re-appears on cooling. One part carbol fuchsin, two parts of Löffler's blue solution and dilute hydrobromic acid, heated to boiling and cooled, give a blue solution which turns green on addition to urine containing bile pigment, and blue in all other cases. On heating the green disappears, and the liquid becomes purple; on cooling the green returns. He gives several other curious reactions with various combinations, but it is doubtful whether any of them are more trustworthy than the older means.

REFERENCES.—¹*Amer. Jour. Med. Sci.*, Oct., 1902; ²*Brit. Med. Jour.*, May 14, 1903; ³*Lancet*, Oct. 4, 1902; ⁴*Johns Hopkins Hosp. Bull.*, Feb., 1901; ⁵*Lancet*, Jan. 10, 1903; ⁶*Ibid.*; ⁷*Intercol. Med. Jour. Austr.*, 1902; ⁸*Johns Hopkins Hosp. Bull.*, April, 1902; ⁹*Corr. Bl. f. Schweiz. Aerzte*, May 15, 1902; ¹⁰*New York Med. Jour.*, May, 1902; ¹¹*Rév. Med. de Can. Montreal*, Oct. 16, 1901; ¹²*Pract.*, Feb. 1903; ¹³*Lancet*, Sept. 6, 1902; ¹⁴*Deut. Med. Woch.*, No. 11, p. 161, 1901; ¹⁵*Med. Rec.*, Feb., 1903; ¹⁶*Wien. Med. Woch.*, May 3 and 10, 1902; ¹⁷*Amer. Jour. Med. Sci.*, May, 1902; ¹⁸*Brit. Med. Jour.*, Sept. 4, 1880; ¹⁹*Ibid.*, Oct. 25, 1902; ²⁰*Ibid.*

UTERUS, (Displacements of). Arthur E. Giles, M.D., F.R.C.S.

We shall here briefly allude to some of the new plans proposed for the relief of uterine displacements, and to some of the results of older methods.

Alexander's operation finds favour with a certain number of surgeons; Le Roy Broun¹ thinks that no other operation for backward displacements gives such uniformly good results. He lays stress on the exposure to view of both pillars and the external ring before any effort to pick up the ligament is made.

Vaginal Fixation of the Uterus is strongly advocated by McCann, who adopts a modification of the methods of Dührssen and Mackenrodt.² The steps of the operation are as follows: The patient being placed in the lithotomy position, with the pelvis raised, the cervix is drawn downwards with a vulsellum. The anterior vaginal wall being put on the stretch, an incision is made in the middle line, from close to the urethral orifice to the junction of the cervix and vaginal wall. A transverse incision is now made (*see Fig. 36*) in order to give more space for manipulation. The vaginal wall is then separated carefully from the bladder, care being taken to strip off as much tissue as possible in order to obtain a thick flap. The vaginal wall being separated from the bladder, the latter is next separated from the uterus, and the utero-vesical peritoneal fold exposed. This fold can usually be pressed down with the index finger, and the peritoneum opened with scissors close to the uterus. If not, the peritoneum can be caught with forceps and then opened. The opening in the peritoneum is enlarged, and a metal retractor, introduced through the opening, holds back the bladder and exposes the anterior surface of the uterus. The uterus is grasped with a pair of bullet forceps just above the os internum, and its position rectified. A curved needle on a handle is passed through the anterior uterine wall, then threaded and withdrawn. This is repeated according to the number of stitches employed. Two or three have been inserted in the cases here narrated, one suture always being placed where the bullet forceps are applied, in order to control any bleeding which their temporary application may cause. The sutures at each end are then threaded through an ordinary curved needle, which is in turn passed through the

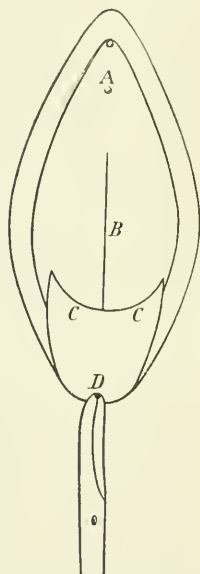


Fig. 36.—A, Urethra. B, C, Line of Incision in the vaginal wall. D, Cervix drawn down by vulsellum.

vaginal wall and the thread withdrawn (*Fig. 37*). Before tightening the sutures the position of the uterus is again determined and, if necessary, corrected. The tying of the sutures fixes the uterus and approximates the two sides of the incised vaginal wall. More accurate apposition is ensured by the insertion of a few points of chromic catgut suture. A gauze plug placed in the vagina completes the operation (*Fig. 38*).

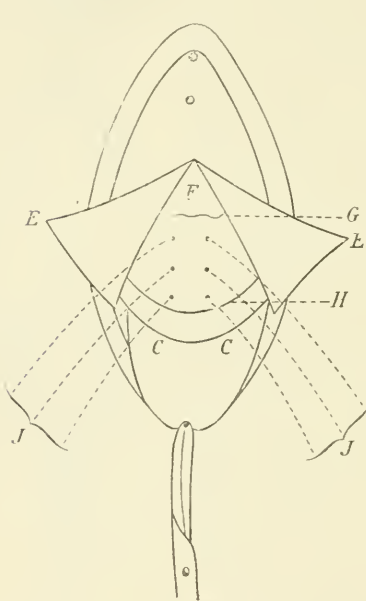


Fig. 37—The utero-vesical pouch of peritoneum has been opened, and the fixation sutures inserted in the anterior uterine wall. E, E, Flaps of vaginal wall separated from the bladder. F, Retracted bladder. G, Vesical peritoneum. H, Uterine peritoneum. C C, Line of Incision. J, J, Fixation sutures in the anterior wall of the uterus.

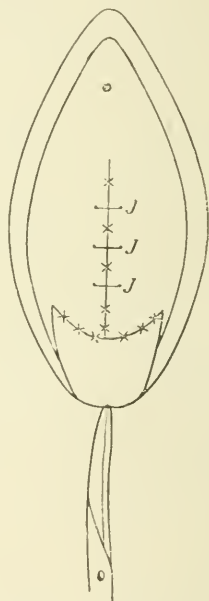


Fig. 38—J, J, J, Three fixation sutures which have been passed through the vaginal flaps and tied. The x's indicate chromic catgut sutures.

Vaginal suturing of the Round Ligaments is an operation that was devised by Vineberg,³ who reports the results of 57 cases. He claims an anatomical success in 96 per cent of cases, and says that there need be no fear of dystocia following the operation.

Anterior Transplantation of the Round Ligaments.—Hugh Ferguson⁴ gives this name to an operation which he first per-

formed in 1896. His description is as follows: Place the patient in the Trendelenburg position. Make a median incision, about 3 inches in length, through the abdominal wall, the lower angle of which reaches the suprapubic fold, and dissect the fat and skin from the anterior sheath of the rectus muscle on either side of the abdominal incision, corresponding to its lower third. Pass two fingers of the left hand into the abdominal cavity on one side beneath the rectus muscle, already exposed anteriorly, to locate and protect the bladder; then make a stab wound through the rectus muscle, in the direction of its fibres, into the abdominal cavity, between the two fingers, an inch from the median incision and an inch and a half from the pubic bone. Before withdrawing the knife, pass an artery forceps alongside of it into the peritoneal cavity, and with it take hold of the round ligament and a portion of the broad ligament beneath it near the uterus. To prevent the bowel from slipping between uterus and bladder—(1) A continuous suture is made, running along the parietal peritoneum from the puncture in it and rectus muscle downward to the side of the bladder, and back, posteriorly, to the round ligament near the uterus. In this almost circular sweep of the needle and thread the peritoneum is caught up about every third of an inch. When the suture is tied an antero-posterior partition of folded peritoneum is thrown between the iliac and bladder regions on each side. (2) The round ligaments are fastened to the parietal peritoneum on each side from the internal inguinal rings to the artificial openings in the abdomen, through which they are transfixed. Then drag the proximal end of the round ligament through the rectus muscle with the forceps already attached to it, and sew it and the subjacent portion of broad ligament to the anterior sheath of the rectus muscle, leaving a stump of about half an inch long between the parietal peritoneum and uterus. Deal with the other side in a similar manner, close the abdomen, and the operation is complete. Ferguson claims for the operation described the following advantages: (1) It is easy to perform, because all the structures involved are seen as well as handled while performing it. (2) The uterus is left free in the abdominal cavity, as no stitches or bands are attached to it. (3) There is no interference with the physiological functions of the organ, menstruation, conception, parturition, labour, or involution. (4) It has a wider range of application than any operation known to him.

An almost exactly similar procedure has recently been described as a new operation by Foschini.⁵

Prolapse of the Uterus.—Stanmore Bishop⁶ considers that the importance of the utero-sacral ligaments in preventing prolapse has not been fully realized; and he describes an operation intended to restore these ligaments in cases where they have become stretched or torn. His method is as follows: The protrusion being reduced, the patient is placed in the extreme Trendelenburg position, and the abdominal wall is opened by a median incision. As soon as the intestines have sunk away from the pelvis towards the diaphragm, two threads are passed through the broad ligaments, one on either side of the uterus enclosing tube and round ligament; the ends of these threads are tied, and by them, as tractors, the fundus of the uterus is drawn forwards. A special sound is passed up the vagina by an assistant, and made to press upwards the posterior fornix so as to render it prominent. On either side a stout silk thread is passed vertically through the substance of the fornix, avoiding the mucous lining, so that each protruding end is half an inch distant from the other, and the whole loop is from one-half to three-quarters of an inch from the cervix. The fornix is now applied to the sacrum, and a spot is chosen directly opposite, free from vessels and subjacent nerves and ureter, and well outside the rectum, where the needle carrying this suture is entered deeply so as to embrace the periosteum covering the bone; it is brought out again half an inch directly above its point of entrance. Before tying this suture a narrow strip of peritoneum is removed from that portion of the fornix which lies in its grip, so as to bare the connective tissue beneath. This is repeated on the opposite side; the sutures are tied and their ends are cut short. Sometimes the position of the rectum will only permit of single fixation. This should then be more central in its position as regards the uterus and somewhat broader. The new ligament or ligaments are now formed, and the cervix hangs in its normal position from the sacrum by that portion of the vagina which lies between it and the sutures. The traction threads through the broad ligaments are now removed. As in all cases of procidentia the round ligaments have been also greatly lengthened, they are now shortened by Olshausen's method. But it is important not to shorten them to their fullest extent, so as to permit of some play still being left, so that the uterus may rise with the filling of the bladder beneath as in the

normal condition. For this part of the work, Doyen's pubic retractor is very useful, giving as it does a clear view of these ligaments and of their points of exit from the pelvic cavity. After shortening the round ligaments it is removed and the abdomen is closed.

Crewdson Thomas⁷ reports a case of prolapse successfully treated by Inglis Parsons' method of **Injections of Quinine** into the broad ligaments.

Stephen Paget⁸ has applied the plan of **Injecting Paraffin** to cases of prolapse. In several intractable cases he has succeeded by the injection of from 1 to 2 ounces of paraffin in making the vaginal walls so rigid, and the lumen of the passage so narrow, that the uterus remained high up and fixed, even during violent straining. The bulk of the paraffin should be injected, according to him, beneath the mucous membrane of the posterior vaginal wall and of the posterior part of the vaginal cervix, and also beneath the lateral vaginal walls. He considers, however, that if there is an old laceration of the perinaeum it should be repaired at the same time. The necessity for the latter step is obvious, as, if the vaginal orifice constituted the widest portion of the canal there would be nothing to prevent the prolapse recurring and bringing down with it the paraffin injections.

Ultimate Results of operations for Retroflexion and Prolapse.—Andersch⁹ gives tabulated results of 344 cases operated on during four and a half years at the Breslau clinic. The first series included cases of anterior and posterior colporrhaphy. Among 60 patients who were examined 50 were cured. In 37 cases vaginal shortening of the round ligaments was combined with colpoperineorrhaphy. Of 29 patients, 48·2 per cent had a recurrence of the displacement.

Seventy-three cases of vagino-fixation by Dührssen's method are included in the third series, but it was confined to women who had passed the age of child-bearing. Fifty-four patients were examined, in only 7·4 per cent of whom was the uterus retroverted.

In 44 cases of younger women the modified Dührssen's method was adopted—*i.e.*, the vesico-uterine fold alone was sutured; 12·5 per cent of 32 patients examined had a recurrence.

Sixty-three cases of adherent retroflexion, with diseased or adherent adnexa, were treated by ventro-fixation, a permanent cure being noted in 94 per cent of the 50 patients examined afterward.

Commenting on these statistics, the writer notes that the results as regards the cure of prolapsus, as well as of retro-displacement, were quite satisfactory, even in the first series where the prolapsus was the main indication for operation. Although a recurrence of the cystocele was noted in only three cases, he admits that it must be expected to occur eventually in all working women, unless the uterus has been fixed in a position of ante flexion. He believes that most cases of simple retroversion in nulliparæ, and in a few women who have borne children, are usually best treated by pessaries, or, if non-surgical treatment is unsuccessful, by Alexander's operation. That the latter has a limited field, in his opinion, is shown by the fact that he records only nine cases, with four failures.

REFERENCES.—¹*New York Med. Jour.* Dec. 20, 1902; ²*Brit. Med. Jour.* Oct. 11, 1902; ³*Med. Rec.* Sept. 6, 1902; ⁴*New York Med. Jour.* Jan. 17, 1903; ⁵*Rif. Med.* Feb. 4, 1903; ⁶*Lancet*, March 14, 1903; ⁷*Brit. Med. Jour.* Feb. 14, 1903; ⁸*Med. Press*, May 27, 1903; ⁹*Arch. f. Gyn.* vol. lxx, part 2.

VACCINATION.

E. W. Goodall, M.D.

The following is a short summary of a paper by Maude¹ on "Some Clinical Aspects of Revaccination." His paper is based upon observations on about 1,000 revaccinations, in most of which lymph from the National Vaccine Establishment or from Renner's was used.

In revaccination the *period of development of the vesicle* is almost invariably shorter than in primary vaccination. Local symptoms begin to be felt on the second or third day in 75 per cent of the cases. On the other hand, the formation of the vesicle is retarded for a fortnight or longer, especially in elderly persons who have been revaccinated once or twice, but not in recent years.

Recrudescence of Pocks.—The vesicles immediately resulting from the revaccination may die away, to recur in from two to four weeks after the operation. These revived vesicles occur in the same site as the original ones, and are usually abortive.

In one instance what is known as *raspberry excrescence* occurred. "The papule appears to be quite normal at from three to seven days after inoculation, but instead of becoming vesicular it remains hard, dense, bright red in colour, and nodular in form, not unlike a small nævus." This condition may persist for weeks and months.

Character of the Pock.—In a minority of the cases the vesicle



Photo. J. Neale.

VARICELLA

PLATE XXXI.



Photo. J. Neale.

VARICELLA

PLATE XXXII.



Photo. J. Neale.

VARICELLA.



Photo, J. Neale.

VARICELLA

is like that which occurs in primary vaccination. "Its perfection depends upon two factors—the period since last vaccination, and a delicate, elastic character of skin." In a large proportion of the cases the vesicle is imperfect and irregular in shape, and the scab is also imperfect, separating earlier and leaving less scar than in primary vaccination.

A surrounding *areola of inflammation* is more common in revaccination than in infants. Intense itching occurs at the inoculated spot for a few days before any marked pock is produced. "The *constitutional symptoms* are unquestionably more severe than in babies." In many cases the temperature rose to 103° F., remaining up for forty-eight hours. There were also headache, sickness, and malaise.

One of the cases vaccinated was a *pregnant* woman, twenty-five years of age, who had not been vaccinated since infancy. She was revaccinated on April 18th, was delivered on the 27th. "Her vaccination was excellent, and so was the baby's, which I performed some months after."

In some cases *boils* occurred. This was observed especially in persons with very freely secreting sweat-glands.

Rashes.—The rashes met with were urticaria, erythema multiforme, wandering erythema, and a generalised roseola resembling measles. They came out before the appearance of the vesicles, on the first to fifth day after inoculation, and were particularly common in adult females. The generalised vesicular rash of vaccinia was met with once only, in the case of an elderly man. It came out on the fifth day after inoculation.

REFERENCE.—¹*Lancet*, Nov. 1, 1902.

VARICELLA.

E. W. Goodall, M.D.

Plates XXX to XXXII'—all of them, with the exception of *Plate XXXIII*, being from the same case—illustrate the eruption in this disease. *Plates XXX and XXXI* show the distribution of the eruption. Compare them with the plates of small-pox, and observe that in varicella the hands, wrists, and feet are almost free, and that the back of the trunk is hardly more affected than the front. Although there is a good deal of eruption, the pocks are nearly all discrete, there being only a very slight attempt at confluence in one or two places on the face and neck. In this case there was a good deal of inflammation round the pocks, especially on the back, where the vesicles

were flattened out by pressure. Some of the pocks became pustular, but the pus was thin and watery, and not thick as in small-pox. In the case depicted the eruption came out on the first day of the illness, and appeared first on the trunk, neck, and thighs. It did not appear on the face till two days after. Notice in *Plates XXXIII* and *XXXIV* the oval shape of some of the vesicles. As they begin to dry up the vesicles of chicken-pox often become crenate round the edge; but this appearance is not shown in any of the plates. A good many abortive pocks, however, may be seen.

An account of the differential diagnosis of small-pox and chicken-pox was given in last year's *Annual*.

VASO-MOTOR ATAXY.

Prof. A. H. Carter, M.D., F.R.C.P.

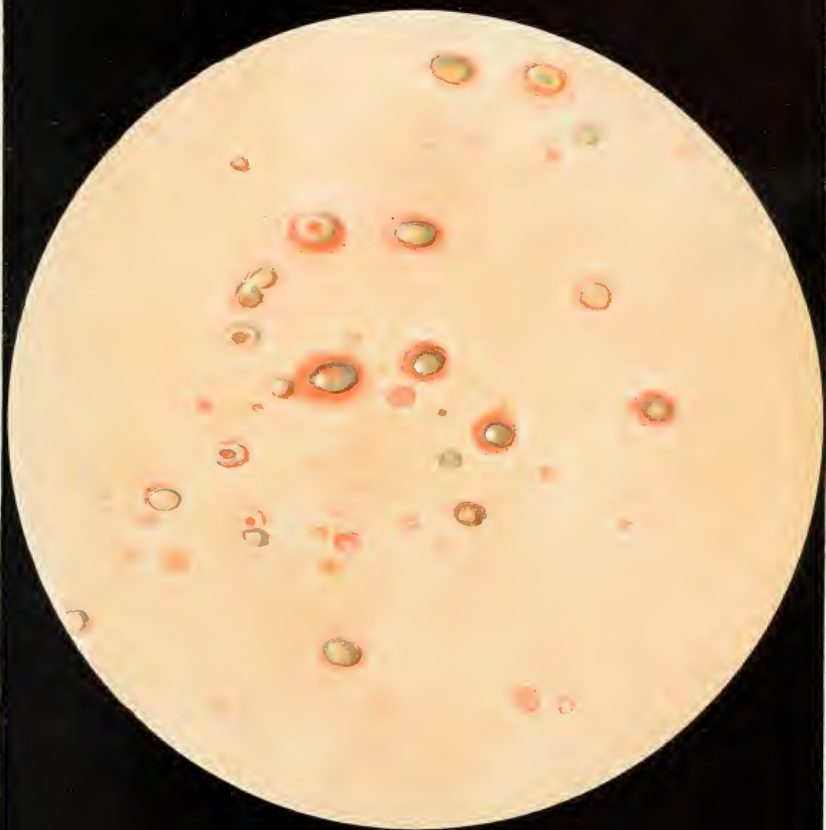
Under this name Solis Cohen¹ groups cases of irregular, and often widely distributed contractions and dilatations of the capillaries and arterioles. He divides them into three classes, namely: (1) Those dependent upon excessive relaxation of the vessels, often associated with impaired cardiac inhibition; (2) Those dependent upon excessive contraction of the vessels, usually with disturbance of cardiac inhibition, but sometimes without cardiac phenomena, and (3) Those in which phenomena of the two opposite groups were commingled. Graves' disease presented an extreme type of the phenomena of excessive vascular relaxation with paresis of cardiac inhibition. Raynaud's disease was an excessive type of vascular constriction. Between these two extremes were many varieties and grades of severity, for example urticaria, angio-neurotic œdema, drug idiosyncrasies, hay fever, tendencies to hæmorrhage from various organs, minute cutaneous angiomas, and paroxysmal tachycardia. Frequently these persons were hysterical, but this was by no means a constant accompaniment. The symptoms of the menopause were essentially vasomotor ataxic in character, but were a transient phase in the devolution of the female. Essential vaso-motor ataxia was usually a congenital condition affecting in different ways several members of one family. At times, however, they seemed to result from disease or accident.

REFERENCE.—¹*Brit. Med. Jour.* Sept. 13, 1903.

YEINS (Suture of). (*See also* "Arteries, Suture of," and "Thrombosis").

Priestley Leech, M.D., F.R.C.S.

The suture of veins is often done, but Houzel¹ has collected three interesting cases of wound of the inferior vena cava during



(Ralph C. Richards, ad nat del.)

Varicella.

MEDICAL ANNUAL, 1904.

operation. Two of these were treated by ligature, and one by lateral suture. Life and health are not incompatible with obliteration of the inferior vena cava, as this has been found obliterated in several cases *post-mortem*, but ligature of the vein in animals has been invariably followed by a fatal result, probably due to the fact that no time had been allowed for the gradual production of a collateral circulation. In two of these cases where ligatures were used, probably some stenosis had occurred: one was removal of a lympho-sarcoma, and the other a nephrectomy. A good recovery ensued in both these cases. In the case of lateral suture, the patient died eighteen hours after a nephrectomy, and a *post-mortem* revealed the edges of the wound in the vein in good apposition and adherent; there was no thrombosis, and no hæmorrhage had occurred.

A wound in a large vein, if not too extensive, may be closed by forcipressure, lateral ligature, or lateral suture; the latter is preferable if feasible. Fine sewing needles and fine silk or catgut should be used, and a second row of sutures taking up the sheath of the vein and some surrounding connective tissue. The sutures may go through the whole thickness of the venous wall, or be passed like Lembert's sutures are in the intestine.

Three cases of the artificial surgical production of arterio-venous anastomosis have been recorded in the human subject; in all the femoral artery and vein were anastomosed. Two were done by a Spanish surgeon, San Martin y Satrustegui,² both being subjects of spontaneous gangrene of the foot. In one the operation did not arrest the gangrene, and amputation had to be done: in the other it was done at the same time as amputation of the gangrenous toes, and recovery with arrest of the gangrene ensued. The third case is one reported by Gallois and Pinatelle³ where an anastomosis between the femoral artery and vein was done by Jaboulay of Lyons. The operation was not successful, and amputation of the thigh was done a month later, the patient dying of cerebral embolism. The anastomosis was done in the same manner as a gastro-enterostomy, by suture.

Jaboulay has suggested a similar procedure in the human subject in altered conditions of the cerebral circulation—an end to end anastomosis of the carotid artery and jugular vein. This operation has been done in the dog by Carel and Morel⁴ with success. The object is to supply arterial blood to a part by the vein when the artery itself is obstructed. It appears very

doubtful whether such a procedure will attain a definite place in surgery, though it is very interesting that such an operation can be successfully performed.

REFERENCES.—¹*Rev. de Chir.* March, 1903; ²*Bull. Méd.* May 10, 1902; ³*Rev. de Chir.* Feb. 1903; ⁴*Lyon Méd.* July, 1902.

VISION, (Disorders of).

A. Hugh Thompson, M.A., M.D.

Myopia.—At the 1902 meeting of the British Medical Association, Prof. Widmark,¹ of Stockholm, raised once again a discussion on the etiology of myopia. Hitherto, he maintained, our attention has been fixed too exclusively on the relative influence of accommodation and convergence in the production of myopia, to the exclusion of a third factor which he considers more important than either, and which he terms "seeing" in a limited sense; *i.e.*, the perception at the yellow spot, and the processes connected therewith at the posterior pole of the eye. Hyperæmia and the accumulated processes of fatigue, more than anything else, are the main causes which, in his view, lead to the weakening of the membranes. In support of this he brings forward the following arguments:—

(1,) In cases where corneal spots and astigmatism occur in one eye only, it is in the first place the sound eye which is affected with myopia. The defective eye is not employed and therefore does not suffer.

(2,) Children who have lost one eye, or in whom one eye has a divergent strabismus, may still become myopic in the second eye.

(3,) The ordinary direction of the posterior staphyloma tells against the theory of convergence. If the membranes were stretched by reading—*i.e.*, convergence combined with looking down—the direction of the crescent would be up and out, whereas it is usually down and out.

In discussing the paper, Mr. Holmes Spicer questioned the statement that the development of myopia in a good eye the fellow to which is defective or absent, is a common occurrence. However this may be—and it is a point which should be easy to verify—there can be no doubt that in calling attention to the importance of the accumulated products of fatigue, Prof. Widmark has done good service. It provides a rational basis for the treatment which in all cases of progressive myopia is constantly found beneficial—**Rest** for a few weeks at a time enforced by atropine and dark glasses.

With regard to treatment by **Correcting Glasses**, Widmark agrees with the view which of late years has been coming more and more into favour. He prescribes *fully* correcting glasses for constant wear, if accommodation and acuteness of vision are both good. This is certainly the best way to avoid any habitual stoop in growing children who are myopic, and all will agree that this is essential. A further justification for the practice is that it discourages habitual convergence of the eyes, and so avoids the pressure of the lateral muscles on the globe. Widmark's main reason for doing it is in order to retain the power of binocular fixation at varying distances, and the promotion of clear images on the retina.

As to patients in whom accommodation or acuteness of vision are defective, each case must be judged on its own merits, but, as a general rule, as full a correction as is compatible with the patient's comfort will be the best.

REFERENCES.—¹*Brit. Med. Jour.*, Nov. 1, 1902; *Ophth. Rev.*, Dec. 1902.

VOMITING, IN INFANCY.

(See "Gastro-intestinal Disorders of Infants.")

WHITLOW.

Priestley Leech, M.D., F.R.C.S.

Wallace Lee¹ of New York, has some very interesting suggestions as to the treatment of this condition. The disease is often treated at home, and when the surgeon sees it the inflammation has advanced very far. The origin of the mischief is a slight trauma, which becomes infected, and soon leads to a virulent septic infection.

In the severe forms, an anæsthetic should be given; the hand and forearm should be washed with hot water and soap, so as to place the parts in as aseptic a condition as possible; elevate the hand and arm, make digital pressure over the brachial artery, so as to blanch the parts, and then apply an Esmarch bandage. This controls the hæmorrhage, which would obscure the parts. An incision is then made from a point a little beyond the inflamed area to the tip of the finger, down to the bone if necessary. As all hæmorrhage and oozing have been prevented by the application of the Esmarch bandage, the extent of the disease can be ascertained. All pus and sloughing *débris* should be cleared out with peroxide of hydrogen, and the cavity washed well with a 1 in 1000 perchloride solution. With knife, scissors, and curette, all diseased tissue should be removed—integument, cellular

tissue, tendon, periosteum, and bone. Clean out the wound with peroxide and perchloride, and then swab the whole cavity with pure carbolic acid, immediately followed by a washing with alcohol, which will prevent over-action of the carbolic acid. A moist dressing of gauze and perchloride is applied, and over this rubber tissue, cotton wool, and a bandage. The results are good.

H. A. Leipziger² recommends exactly similar treatment, removal of all infected tissue.

REFERENCES.—¹*New York Med. Jour.* March 21, 1903; ²*The Railway Surgeon*, in *Med. Rec.* Aug. 23, 1902.

WHOOPIING COUGH. (*See* "Pertussis.")

PART III.—MISCELLANEOUS.

Sanitary Science, 1903.

BY JOSEPH PRIESTLEY, B.A., M.D., D.P.H.

Medical Officer of Health, Borough of Lambeth, London.

DISINFECTION.

An important improvement has been introduced during the past year in connection with steam disinfectors, which at times fail on account of the residual air, that is left in the machine, preventing the disinfecting process being thoroughly efficient. Mr. Wolf Defries has introduced an instrument, which is workable by an entirely unskilled attendant, and which can be fitted readily to any existing steam disinfecting machine. The principle of the instrument depends upon the natural law that steam is readily condensable by cold water (air remaining gaseous). A sample of air from the disinfecting machine is led through a cock into a syphon, of which the two legs dip into water. The cock is closed, and the water immediately condenses the steam and rises in the legs of the syphon until stopped by any residual air. The legs of the syphon dip into two separate vessels, at different levels, and, the difference in the legs of the syphon being small, the steam (when condensed) allows water to rise in each separate leg in independent columns, and without starting the syphon, so long as any bubble of air remains at the top. The two independent columns of water join when the last trace of air is eliminated, with the result that, the syphon action being established, the contents of the upper vessel are immediately and rapidly syphoned over into the lower vessel. Like all useful practical inventions, its action is extremely simple.

DRAINAGE.

Attention has been drawn to drainage, in connection with a special meeting held in London under the auspices of the Sanitary Institute, when a resolution was passed (with only one dissentient) to the effect that "all systems of drainage for conveying sewage should be capable of resisting a pressure of at least 2 foot head of water." The resolution was, in the usual way, referred to the Council of the Sanitary Institute, and the members decided that "such a condition was not applicable to all cases of drainage."

The water (hydraulic) test is a drastic one, and should not be applied indiscriminately to all old drains. Even in connection with new stoneware drains, this test is likely to fail under certain conditions, *e.g.* :—

- (1,) Swelling and contracting of cement used in the joints ;
- (2,) Uneven settlement of bed on which the drains are laid, or unequal expansion of concrete beds ;
- (3,) Careless filling in of the trenches in which the pipes are laid ;
- (4,) The testing and filling in of work before the cement (used in joints) is thoroughly hard ;
- (5,) The cracking of pipes, or cement, from vibration of traffic, etc. ;
- (6,) The use of (*a*) inferior cement, (*b*) too highly glazed spigots and sockets, (*c*) gaskin in the making of joints, etc.

The greatest care is, therefore, necessary in drain laying, more especially when stoneware pipes are used.

EDUCATION ACT 1903, AND SCHOOL HYGIENE.

Practically speaking, the Sanitary Authority becomes the Educational Authority, and, therefore, by inference, the Medical Officer of Health becomes, *quâ* his position, expert adviser in connection with schools, at least elementary schools. Whether the medical officer be the District, or County medical officer, is simply a matter of local detail, to be settled hereafter ; the principle enunciated in the Act is the all-important question. That such a change was needed will be admitted by all, when it is remembered that, under given conditions, schools may be manufactories of infectious diseases, and to these schools about 6,000,000 children in England and Wales are compulsorily sent, to pass therein a considerable portion of their time. The educational authorities need, therefore, at every turn expert medical advice, *e.g.*, planning of school buildings, inspecting of the children, preventing of the spread of infectious diseases when introduced from without, the ventilating, lighting, and warming of class rooms, the providing of proper sanitary fittings, etc. ; and such advice can be given, and acted upon, under Articles 85 and 88 of the Educational Code.

It is remarkable that the same year that has seen the birth of the new Education Act, should have also seen the death of Article 101* of the Educational Code, by which, formerly, a grant ("epidemic grant") was claimable for children excluded from school, on account of infectious disease. This article in districts where it has been efficiently worked has, as pointed out officially by the Medical Officers of Health Society, proved most advantageous to the public health, and its withdrawal will be, consequently, detrimental in two directions—first, by causing the return to school of children not completely convalescent from acute disease ; and, second, by making it

increasingly difficult to exclude from attendance at school, children who are capable of spreading infectious disease, either because they have suffered from slight attacks, or because they have been recently in contact with cases of these diseases. Compulsory school attendance keeps up the prevalence of infectious disease amongst children. Such are the unanimous opinions of Medical Officers of Health, and they have, unsuccessfully, petitioned on these lines, during 1903, the Board of Education, who give as their reasons for refusal (1) the difficulty in administration of Article 101*, and (2) the comparatively small amounts awarded as "epidemic grants" in the past. It is true that Article 88 remains, by which schools (or classes) can be closed, and infected children (or children from infected houses or neighbourhoods) kept from attending schools, with a view to preventing the spread of infectious diseases by means of such schools—a means now universally acknowledged by all medical officers. Medical inspection of all school children becomes now more and more a necessity, so as to exclude from attendance at schools any child that may be suffering from, or sickening with, measles or other infectious disease. There is a *danger*, now that there is no "epidemic grant," of convalescent children being forced back into schools prematurely (*i.e.*, before quite free from infection), so as to keep up the average attendances which are needed for the securing of the ordinary educational financial aid.

MINERS' WORM (Ankylostomiasis).

This disease has broken out amongst the miners in Cornwall, probably introduced from South Africa or the tropics *via* the Continent, and is being specially investigated by the Home Office with a view to preventing its spread. The disease is due to the *ankylostomum duodenale*—a worm whose habitat is earth, from whence it passes into the human subject with food through the medium of unwashed hands. Progressive anæmia is the result, giving rise to the following symptoms:—giddiness, headache, pains over body, epigastric oppression, difficulty in breathing, mental weakness, etc. The worms are chiefly found at the junction of the jejunum and duodenum, where they cling tenaciously, so that eggs only as a rule are found in the evacuations of patients suffering from this disease. The disease spreads rapidly when introduced into a district, and is difficult to eradicate when once established. (See "Ankylostomiasis," p. 146).

MEASLES.

The County of London has taken a forward step in an endeavour to battle with measles, and to minimise (if not prevent) its ravages. On Jan. 1st, 1903, measles became, throughout the County of London, a "dangerous and infectious disease" as scheduled in the Public Health (London) Act, 1891. In this

way, measles is regarded *legally* as a dangerous disease, and the preventive measures available in connection with the well-known notifiable diseases, *e.g.*, smallpox, scarlet fever, diphtheria, etc., are available also in connection with measles. Such preventive measures are contained in sections 60-66, 68-70, 72-4; and deal with (a) the prevention of exposure of children suffering from measles in the public streets, in omnibuses or tramcars, at school, etc.; (b) the compulsory disinfection of measles-infected rooms and clothes, etc.; (c) the removal to hospital as required of measles-infected persons; (d) the dealing with measles-infected rubbish; (e) the letting or leaving of houses in which measles-infected persons have been lodging or living; (f) the carrying on of business by measles-infected persons, etc.

That such measures are needed will be admitted when the death-rate from this disease is considered, and the heavy tax that is levied, year by year, upon children under five years of age, especially upon children in their second year. The Registrar-General shows for England and Wales, during the decennium 1881 to 1890, 121,067 deaths from measles at all ages, distributed throughout a *mean* population of 27,488,482 persons—91·5 per cent amongst children under five years of age, 20·9 per cent in infants under one year of age, and 37·9 per cent in children between one and two years of age. The rates for London are much the same—slightly higher.

It is difficult to give accurate statistics as to the number of persons affected, on account of the fact that measles is not a notifiable disease except in a very few instances, but from the data at our disposal it would appear that (roughly) the fatality rates per 1000 of those attacked are (1) at all ages 6·1; (2) under one year 9·6; (3) between one and two years (19·7). In this way, given the total deaths, the numbers of persons affected can be readily calculated.

Whichever way the statistics are looked at, the seriousness of the morbidity and mortality from measles is shown, and the extraordinary thing is that preventive measures have not hitherto been taken in respect of this disease. London's experiment will, therefore, be watched with eagerness by other large cities and towns. Measles is certainly not "a simple complaint of childhood, to be got over—and the sooner the better." By such a mode of erroneous reasoning, many a mother has been a party to the death of her own children. It will be noted that the compulsory notification of measles is not included in the preventive measures adopted. Measles, however, being a disease of childhood, a systematic notification to Medical Officers of Health by school authorities is most desirable, and will (it is hoped) be attained by the new Education Act, whereby the Health Authority and the Education Authority become, practically, one and the same. In this connection, medical inspection, at regular intervals, of all school children becomes invaluable.

MUNICIPAL MILK DEPOTS.

All sanitarians are agreed that breast-fed children have more advantages in the race of life than those depending upon artificial nourishment. Unfortunately, the number of the former becomes, from a variety of reasons, yearly smaller and smaller, and we are face to face with the practical difficulty as to how best to make up for such a state of affairs. Cow's milk modified so as to approach in composition human milk is, undoubtedly, the best food for infants under twelve months of age, but how to secure it for the poorer classes is a problem, the solution of which teems with difficulties.

Intimately associated with the question of its provision, is the question of how to secure such milk being free from contamination, germal or otherwise. Sterilised humanised milk for infants is needed, if the present heavy tax, levied on infants and young children, is to be reduced to any material extent. That such need is a real one may be admitted when the present tendency of sanitary authorities is taken into account.

The example set in 1894 at Fécamp, in France, by Dr. Dufour, in establishing the so-called "*Goutte de lait*" dispensaries, from which "prepared" sterilised milk is distributed, philanthropically, to the poorer classes for the use of their infants, is being followed both in France and England. Liverpool is specially going ahead in this direction, and several other large towns have either already decided to supply, or are at present considering the advisability of supplying, sterilised humanised milk, at a cost to bring it within the reach of the poorer classes, even, if necessary, at the expense of the rates. Milk is prepared—humanised, by mixing it with a suitable proportion of water, cream, lactose, and common salt. It is sterilised (by steam) in bottles, sufficiently large to contain enough food for one meal—the usual method being to distribute nine bottles in a wire basket for use during twenty-four hours. Each bottle represents one meal, and is not to be opened until required for use, thereby preventing home-contamination of milk by storage in an insanitary pantry or living room. A teat or teats are provided for use with each bottle, and these teats are under periodical inspection as to cleanliness by the officers of the sanitary authority.

The charge generally made is 1s. 6d. to 1s. 9d. per week, according to the age of the infant or child to be fed; and, where the quantity of milk distributed is sufficiently large, the receipts and expenses may balance one another, provided care and economy of management are practised. Should there be a deficit, surely a vote from the rates is justifiable when the good that would accrue to infants and children is taken into account!

In provincial towns, where local auditors are appointed by the sanitary authorities, no difficulty would appear to arise when

such a vote from the rates becomes necessary. In London, however, the case is unfortunately different—the *official* L. G. B. auditors objecting to the use of the rates for such a purpose. The Metropolitan district of Battersea has been surcharged in this respect, and the L. G. B., on appeal, has supported this decision of the official auditor, but decided to remit the disallowance in the particular case appealed against. This action of the L. G. B. may be strictly legal, and, as such, may be sufficient to satisfy the Board, but it certainly puts Metropolitan sanitary authorities into a very awkward position, the fear of the surcharge being one to frighten the representatives of the rate-payers. It is clear that municipal milk depôts must be under strict medical supervision at all times, and that, under such conditions, such establishments are most desirable from a public health point of view, as being likely to reduce materially the infantile death-rate. If municipal trading is to be allowed at all, it should be in such directions as these.

OPHTHALMIA.

Contagious ophthalmia is the cause of much trouble in connection with Poor Law schools, and strict isolation of the affected scholars or inmates appears to be the only satisfactory preventive treatment. Isolation-schools are, therefore, a certain cure, and, consequently, their provision becomes absolutely necessary. The Metropolitan Asylums Board (the infectious diseases isolation authority in London) has, during the past year (May 23rd, 1903), opened a school at Swanley, Kent, for the isolation and treatment of children suffering from ophthalmia throughout the Poor Law districts of London. It is a school-hospital, or isolation-school, arranged on the "scattered homes" system, where treatment and education go on together. That such a school for London cases was needed, goes without saying, and it was in 1897 that the L. G. B. made an Order casting upon the Metropolitan Asylums Board such a duty.

Ophthalmia is a disease that fluctuates considerably, having its periods of *maximum* and *minimum* virulence. One attack does not, unfortunately, render the child attacked immune; on the contrary, a child may have as many as ten attacks. The disease is, at first, imported, and then spreads from child to child. Unchecked, the disease may pass from slight conjunctivitis, through purulent ophthalmia, to trachoma, and even blindness, so that the strictest measures are necessary to prevent the disease spreading, as it rapidly does in schools where overcrowding exists and insanitary conditions prevail.

SANATORIA FOR CONSUMPTIVES.

Sanatoria for consumptives are "booming," due to the interest that Royalty is taking in them. The foundation stone of the King Edward VII Sanatorium has been laid during 1903.

There are two aspects to the question of the provision of sanatoria, two separate benefits to be derived, *viz.*, (a) the open-air treatment of the disease, and (b) the educative value of such institutions. This educative value is important, and deserves careful consideration. Patients treated in sanatoria are taught the true (infectious) nature of tuberculosis, and the consequent simple precautionary measures that can be taken individually by themselves when they return to their homes. The sanatorium must be suitably placed on open, airy and dry (or well-drained) land; and so situated as to obtain the maximum amount of day- and sun-light. Further, the "scattered homes" system is the best, *i.e.*, *châteaux* or bungalows as against hospitals.

To save the large expenses connected with building special sanatoria, existing isolation hospital accommodation is being utilised by some sanitary authorities, and much good is accruing from such a use. Patients suffering from consumption are taken into isolation for periods, varying from one to three (or more) months, during which time they become educated in the infectious nature of the disease, the value of fresh air and sunlight (as factors in treatment), and the simple necessary preventive measures. Further, the patients' general health and vitality are much improved, and the disease (in part, at least) arrested. During the patients' absence from their homes, the necessary disinfection and cleansing of rooms, etc., can be efficiently carried out.

Several provincial towns are using their existing isolation hospital accommodation in this way, and it has been suggested that the Metropolitan Asylums Board might, with advantage, follow in the same lines with regard to London, using the Gore Farm Hospital (a disused smallpox hospital) for such a purpose. To remove from amongst the general population, even only for a short time, a small number of persons, who are disseminating broadcast, daily and hourly, the germs of consumption, must do good, whilst the educative value of such action will be admitted by all as incontrovertible. Germany is much ahead of England in providing sanatoria for tuberculous patients.

SEWAGE DISPOSAL.

During the past year, another Report has been issued by the Royal Commission, and further papers as to practical working and suggestions have been read to congresses, sanitary authorities, etc. The cardinal principles emphasised are (1) that chemical precipitation is unnecessary, and (2) that septic (or resolving) tanks for sedimentation and liquefaction are necessary. Granite and clean hard clinker (1 in. to 2½ in. gauge) are most suitable for coarse beds or filters, and granite chippings, fine coal and coke ($\frac{3}{16}$ to $\frac{3}{4}$ in. gauge) for fine beds; and, further, continuous filters give better practical results than contact beds, mechanical distributors being used as far as possible. Under the above

conditions, the effluents are found satisfactory in that they do not undergo offensive putrefaction at all, even in summer, and cannot, therefore, become at any time offensive.

By continuous sedimentation, the raw sewage is deprived of matter, which would choke the coke beds otherwise, and the sludge left is reduced in amount by bacterial action to a considerable extent. Thus, according to the recent report to the London County Council, published by Prof. F. Clowes, the average sewage capacity (with the beds in full use) is about 30 per cent of the whole space filled with coke or other filtering material, and this capacity practically undergoes no permanent reduction. Where coke is used, it does not integrate, provided such coke be of suitable quality.

SPITTING IN PUBLIC PLACES.

Tuberculosis is spread chiefly by the dissemination of infective (tuberculous) sputum, by molecular infection or otherwise, and such a method is daily coming more and more to be admitted. Hence, as a natural consequence, the "crusade" against indiscriminate spitting, which is a dangerous and disgusting habit. Byelaws are being passed and enforced by different authorities, prohibiting spitting in all places of public resort (such as churches, theatres, and so on), on tramways, in railway carriages and omnibuses, etc. Manchester, Liverpool, Glasgow, and the London and Glamorganshire County Councils may be mentioned in this connection so far as the British Isles are concerned, but many towns in the United States and Canada, as also several important Continental countries, are much ahead in this respect.

The object in view is definite, *viz.*, the limitation of the amount of consumption-infected dust, which is being daily formed, and scattered throughout the world. The bars of public-houses are much to blame for this source of tuberculosis-infection through indiscriminate spitting, and it has been recently shown that the public-house servants who sweep out the bars suffer from phthisis out of all proportion to persons of other occupations, except, perhaps, tin miners and costermongers. The reason for this exceptional mortality is the infected dust, as well as alcoholism. It may be that costermongers suffer severely "owing to their early visits to public houses at a time when the sweeping out of bars is taking place" (Dr. Davies, M.O.H., Woolwich), as well as owing to their alcoholic tendencies. Alcohol as a predisposer to phthisis is well-known, but the suggestion above as to the part played by the bars of public-houses in the dissemination of phthisis is comparatively new, and extremely important. Whether workshop or public-house infection is the more serious, remains yet to be proved.

Legal Decisions

AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,

Medical Officer of Health, Lambeth, London.

ADULTERATION OF FOOD AND DRUGS,

HUDSON *v.* BRIDGE (Appeal Court).

Sale of Food and Drugs Act, 1875, ss. 18 and 21, and Schedule to s. 18—Compounded Drug liable to decomposition—Standard of British Pharmacopœia—Analyst's certificate.

A sample of vinegar of squills was taken, analysed, and certified by the analyst to be "not of the nature, substance and quality demanded"—being deficient in acetic acid to the extent of 40 per cent. The vendor was convicted, but a case was stated by the magistrate for the High Court to decide as to whether or not the standard of the British Pharmacopœia lays down acetic acid as part of such standard.

Held, that the British Pharmacopœia does not prescribe any standard for vinegar of squills, but only prescribes the proper process of manufacture; and, further, that vinegar of squills is an article liable to decomposition within the meaning of the note to the schedule prescribing the form of the certificate, and that, therefore, the certificate was bad, no notice of such decomposition having been referred to by the analyst therein.

Appeal allowed.

BOOTS *v.* COWLING (Appeal Court).

Sale of Food and Drugs Act, 1875, s. 6—Compounded Drug may be according to (a) Commercial standard, or (b) Standard of the British Pharmacopœia.

Liniment of soap was purchased, and on analysis declared to be made with methylated, instead of with rectified spirits. The magistrate convicted the vendor, and refused to admit evidence as to the existence of a commercial standard for liniment of soap different from that prescribed by the British Pharmacopœia. A case was stated for the opinion of the High Court, who *held* that such evidence was admissible, and referred the case back to the magistrate for re-hearing.

Appeal allowed.

FINDLEY v. HAAS.

Sale of Food and Drugs Act, 1875, s. 18—Form of Analyst's Certificate sufficient for Brandy under Proof strength legally allowed.

A sample of brandy was taken, and the analyst gave a certificate to the following effect:—"The said sample contained the parts as under, or the percentages of foreign ingredients as under; it has been reduced from 25 degrees under proof to 27.6 degrees under proof." The magistrate refused to convict on the ground that the analyst's certificate was not in form, and a case was stated by the magistrate.

Held, That the certificate was sufficient. *Appeal allowed.*

WILSON v. PLAYLE (Appeal Court).

Sale of Food and Drugs Act, 1875, s. 25—Special warranty with the proviso "but without accepting any responsibility after delivery" is a sufficient Warranty, when Milk is delivered to retailer's place of business.

Sample of milk was taken and found to be adulterated with 7 per cent of water, but the retailer claimed that there was a warranty given with the milk by Messrs. Freeth and Pocock, the vendors, who, however, denied liability on the ground that the warranty contained the words "but without accepting any responsibility after delivery." The magistrate held that the warranty was sufficient, and stated a case for the High Court, who confirmed the magistrate's decision. *Appeal dismissed.*

SANDYS v. RHODES (Appeal Court).

Sale of Food and Drugs Act, 1875, s. 6—Tapioca sold as Sago is a custom of the trade, and may not necessarily be to the prejudice of the purchaser.

It is a custom of the trade to sell, as sago, pearl tapioca of a certain quality and description, and a sample of such was purchased by an inspector. The magistrate did not convict the vendor, and the summons was dismissed. The Sanitary Authority appealed.

Held, that the sale of pearl tapioca as sago was not to the prejudice of the purchaser—the substitution of pearl tapioca (of a certain quality) for sago being a recognised custom of the trade. *Appeal dismissed.*

MCQUEEN v. JACKSON (Appeal Court).

Sale of Food and Drugs Act, 1899, s. 19 (2)—Time for return of Summons "not less than 14 days."

Held, That there must be 14 clear days between the day on which a summons is served and the day on which it is made returnable. *Appeal dismissed.*

BYELAWS (Penalties under).

ATTORNEY-GENERAL *v.* ASHBOURNE RECREATION GROUND
Co., LTD. (Chancery Division).

Public Health Act, 1875, s. 157—Making of Bye-laws, with Penalty for non-compliance with the same—Injunction by Attorney-General.

Held, That where under a bye-law made by a local authority under s. 157 of the Public Health Act, 1875 (which prescribes a penalty for such offence), a penalty is recoverable by summary proceedings, as in the Act directed, the Attorney-General may proceed by injunction to restrain such offence.

Objection over-ruled.

DRAINAGE.

REEVE *v.* SADLER (Appeal Court).

Public Health Act, 1875, s. 104—Two Houses (belonging to two separate Owners) Adjoining and Drained by a Combined System—Liability of one Owner to another to share Expenses of certain combined Drainage (and other) Works required by Local Authority.

The West Ham Corporation served notices upon the respective owners of 37 and 39, Gurney Road, to put into proper order and condition the drains of their respective houses, which adjoined and are drained by a combined system (39 draining into 37). The work in connection with the combined drain at 37 was done by the owner at a cost of £24 8s. 6d., and half of this cost he sought to recover from the owner of 39. The County Court Judge gave judgment for the defendant (the owner of 39), and the plaintiff (the owner of 37) appealed.

Held, That neither under s. 104 of the Public Health Act, 1875, nor at common law, had the owner of 37 any right of contribution as against the owner of 39, there being no legal responsibility resting upon the latter to perform the necessary works required under notice by the West Ham Corporation to be done in connection with the adjoining owner's premises (37).

Appeal dismissed.

SWINBOURNE *v.* HAMMERSMITH BOROUGH COUNCIL
(Divisional Court).

Metropolis Management Act, 1855, s.s 82., 85, and Metropolis Management (Amendment) Act, 1862, s. 64—Defective Drains—Notice—Specification of Works required—Resolution of the Borough Council—Notice of Order.

Drains were found to be defective at a certain house, and notices under the Public Health (London) Act, 1891, were served. These were not carried out, and, consequently, other notices

were served under the Metropolis Managements Acts calling upon the owner of the house to do certain specified works. Works (other than those specified on these latter notices) were carried out, but the Borough Council was not satisfied, and served a further notice under the Metropolis Management Acts asking for such works to be carried out as may be necessary.

Held, That the notice was not "notice of an order" of the Borough Council within the Act, and that, therefore, there could be no conviction. *Conviction quashed.*

DRAINS v SEWERS.

PROCTOR v. METROPOLITAN BOROUGH OF ISLINGTON

(Appeal Court).

Repair of Combined Drain (Sewer)—Work done by Owner on Intimation Notice—Public Health (London) Act, 1891, s. 3.

This was an appeal from a judgment given by Mr. Justice Wright to the effect that an intimation notice is not a notice that need be legally obeyed; but the Appeal Court gave no decision, merely suggesting that, as in the Court's opinion the works carried out under the intimation notice were done under compulsion, the parties should come to terms. To this suggestion the parties consented. (See also *Medical Annual*, 1903, p. 717-8). *Settled by consent.*

SILLES v. FULHAM BOROUGH COUNCIL.

Metropolis Management Act, 1855, s. 250—Definition of Sewer as applied to combined Rainwater and Drain Pipe.

Mr. Justice Wright held that the drain which receives the rainwater of two or more houses is to be regarded as a "sewer," and against this decision an appeal was lodged and dismissed.

Held, That the decision of Mr. Justice Wright was correct.

Appeal dismissed.

HIGH v. BILLINGS (Appeal Court).

Metropolis Management Act, 1855, ss. 74, 76, 250—Combined Drainage to be sanctioned by the Sanitary Authority—No power for Surveyor to approve on behalf of his Authority.

Six houses (drained by a combined system) were approved by the Surveyor of Hackney District Board on the authorisation of his Authority. There was no record or other evidence of approval by the Board (or by any committee) of such combined drainage system.

Held, That the combined drain was a sewer, no authorisation (or approval) having been given by the District Board.

Appeal dismissed.

FERTILISERS.

KORTEN *v.* WEST SUSSEX COUNTY COUNCIL (Appeal Court).

Fertilisers and Feeding Stuffs Act, 1893, ss. 1, 3, 5—Adulteration—False Invoice—Proceedings precedent to Prosecution.

The County Council prosecuted, under s. 3 of the Fertilisers and Feeding Stuffs Act, 1893, a firm for supplying to another firm 17 tons of Thomas's Phosphate Powder not containing 38 to 45 per cent of total phosphates (as stated on the invoice), and the defendant firm was convicted. An appeal was entered, but dismissed.

Held, That it was not a condition precedent to a prosecution by a County or Borough Council under the Act that the samples should be taken, and an analysis made, in accordance with s. 5 of the Act and the regulations of the Board of Agriculture made thereunder.

Held also, That an invoice false in a material particular had been caused or permitted, though there was no evidence that the manager of the firm saw the particular invoice sent out, or otherwise knew the contents to be false. *Appeal dismissed.*

HOUSES LET IN LODGINGS.

KYFFIN *v.* SIMMONS.

Public Health (London) Act, 1891, s. 94—House let in Lodgings or occupied by members of more than one Family—Ordinary House with each floor occupied by a different Family.

Held, That a six-roomed house with a common staircase, each pair of rooms being occupied by a separate family, is a house occupied by members of more than one family, and, therefore, is entitled to be registered under the bye-laws under s. 94 of the Public Health (London) Act, 1891. *Appeal dismissed.*

INSPECTION (Power of).

WIMBLEDON URBAN DISTRICT COUNCIL *v.* HASTINGS
(King's Bench Division).

Public Health Act, 1875, ss. 4, 91, 92, 102—Overcrowding Nuisance—Day School—House—"Inmates"—Order to Inspect—Reasonable grounds—Evidence—Form of Order.

Sanitary Inspector was refused admission to a High School for Girls where no boarders were received, and an application was, consequently, made to the Justices for an order under s. 102 of the Public Health Act, 1875, with the result that the order was made. This order was afterwards quashed on appeal to the Quarter Sessions, on the ground that the scholars attending the school were not "inmates" within the meaning of s. 91 (5) of the Public Health Act, 1875, and that no nuisance had been alleged to exist, nor any reasonable grounds been shown for suspecting such a nuisance.

Held, That "house" in s. 91 (5) of the Public Health Act, 1875, includes a day school, and that "inmates" include scholars therein.

Held also, That where an application is made to a Justice under s. 102 of the Public Health Act, 1875, for an order to enter premises where a nuisance is alleged to exist, the Justice, although he has not to decide the fact of the existence of such a nuisance, may consider whether there are reasonable grounds for such suspicion, and may receive evidence for that purpose—the form of the order (if made) to state that it is in reference to a particular subject-matter. *Appeal allowed.*

CONSETT URBAN DISTRICT COUNCIL *v.* CRAWFORD (Appeal Court).

Public Health Act, 1875, ss. 102, 306—*Power of Entry of Local Authority—Permission of Owner, or order of Justice, necessary.*

A sub-committee of a Council inspected premises, and were obstructed by the owner.

Held, That the members or officers of a Council have no power under s. 102 of the Public Health Act, 1875, to enter premises except with consent of the owner or by an order of the magistrate, and that, therefore, there was no obstruction legally.

Appeal dismissed.

LANDLORD AND TENANT.

WARRINER *v.* BRADLEY (Chancery Court).

Public Health (London) Act, 1891—*Liability of Tenant to abate a Nuisance on account of a covenant to pay all "Assessments and Imposition."*

This was a three years' agreement, the tenant covenanting to "pay and discharge all rates, taxes, assessments, and impositions whatsoever." A sanitary notice under the Public Health (London) Act, 1891, was served to repair a drain and closet, and do other sanitary work. The tenant did the work, and claimed from the landlord.

Held, That compliance with the sanitary notice was an "imposition" due in respect of the premises within the meaning of the covenant upon the tenant. *Claim disallowed.*

NUISANCES.

PARISH *v.* MAYOR, ETC., OF THE CITY OF LONDON.

(Chancery Division).

A Public Convenience erected by a Sanitary Authority must not be a Nuisance to a Private Owner—City of London Sewers Act, 1848, s. 104.

The City Corporation of London has power under s. 104 of their Sewers Act, 1848, to "erect conveniences in situations

which they deem proper for the accommodation of the public," and, consequently, erected one in Church Row, Aldgate, close to the wall of a private owner's premises (8, Church Row), the entrance of the convenience being against the side of the private house, and only two feet from the only doorway into such private house. The private owner applied for a mandatory injunction against the City Corporation to compel them to pull down the convenience, and this was granted, six weeks being allowed within which the convenience was to be removed.

Held, That a Sanitary Authority which has statutory powers to erect urinals "in such situations as they may think proper" are not, in consequence, empowered to erect them where they are private nuisances, and it is no defence to prove that the sanitary condition of the immediate neighbourhood has been improved by such erection.

Mandamus granted.

Vide also LEYMAN *v.* HESSLE URBAN DISTRICT COUNCIL.

Wherein a similar mandamus was granted under similar conditions, the Sanitary Authority acting under s. 39 Public Health Act, 1875.

RIVER POLLUTION AND PROTECTION.

WEST RIDING OF YORKSHIRE RIVERS BOARD *v.* YORKSHIRE INDIGO SCARLET AND COLOUR DYERS, LIMITED (Appeal Court).

Rivers Pollution Prevention Act, 1876, Part III, ss. 4, 20—*Pollution of a Stream by Trade Effluent—Finding of Judge as to definition of Stream.*

This was an appeal against a County Court Judge's decision (in which it was held that trade effluent by passing into a certain stream polluted that stream) on the ground that the evidence proved that the said stream was a sewer; and that the Judge ought to have in terms found whether or not such stream was a sewer or not.

Held, That, the Judge having found that the channel was a stream, it was not necessary to find in terms that such stream was, or was not, a sewer.

Appeal dismissed.

WEST RIDING OF YORKSHIRE RIVERS BOARD *v.* GAUNT
(King's Bench Division).

Rivers Act, 1894—*Pollution of Stream by Trade Effluent—Stream becomes Sewer after continued Pollution.*

The decision given by Quarter Sessions was to the effect that, in the absence of a proper sewerage system, a trade effluent can be passed into a stream, making such a stream a sewer (*vide Medical Annual*, 1903, p. 722), and the case was taken to the High Court, who remitted the case back for further investigation and evidence.

Case remitted.

SMALLPOX HOSPITALS (Dangers of).

ATTORNEY-GENERAL *v.* URBAN DISTRICT COUNCILS OF RATHMINES AND PEMBROKE (Dublin High Court).

Held, That there was considerable danger to the inhabitants living within a quarter or half of a mile from a small-pox hospital in which patients were under treatment, whether the infection was spread by aerial convection or not.

The site selected was in a populous neighbourhood and abutted on public and private roads, and the tram line. There was a population of 750 persons within a quarter of a mile, and of 2,682 within half a mile, of the proposed site. *Injunction granted.*

CHAPMAN AND WIFE *v.* GILLINGHAM URBAN DISTRICT COUNCIL (Divisional Court).

Temporary Smallpox Hospital—Infection of Persons living near—Negligence.

Damages were claimed for the death of a daughter who contracted smallpox from a temporary smallpox hospital (stable) used by the Gillingham Urban District Council. The stable was 200 yards from the plaintiff's house.

Result, £250 damages awarded, it being held that the hospital (temporary) was a nuisance.

UNSOUND FOOD.

CRAIG *v.* FRY AND ANOTHER.

Public Health (London) Act, 1891, s. 47—Food unfit for Human Consumption sold with Warranty and afterwards Condemned—Liability of Retailer—Dealer to indemnify.

4,400 tins of tinned mackerel (warranted sound) were sold to a retailer for export. The Sanitary Authority seized and destroyed them after 500 had been exported, and the retailer was fined £20 and costs. The retailer brought an action against the vendor for breach of warranty, and it was

Held, That the vendor was liable for the value of the goods, the costs of the defence, and the fine (this last being conditional to the retailer showing that the fine was not imposed or increased in consequence of any default on the retailer's part).

HARKER *v.* CAMBERWELL BOROUGH COUNCIL (Quarter Sessions).

Unsound Meat sold—Conviction by Magistrate and a sentence of three months' hard labour against the wholesale dealer (the retailer being fined £5 and £3 3s. costs)—Public Health (London) Act, 1891, s. 47.

The Magistrate convicted the wholesale dealer without giving him the opportunity of being tried by a jury in accordance with s. 17 of the Summary Jurisdiction Act, 1879.

Held, That the Magistrate was wrong.

Appeal allowed and conviction quashed.

VACCINATION.

HINDS *v.* ELSAM (Appeal Court).

Vaccination Act, 1867, ss. 29, 34—Child not Vaccinated when six months old—Medical Certificate of Unfitness produced at hearing of Summons.

Father neglected to have his child vaccinated within six months of the birth of the child, and, when summoned, produced a certificate of unfitness (the child being then eleven months old).

Held, That the certificate was not a good defence.

Appeal dismissed.

WATER SUPPLY.

BEAUMONT AND OTHERS *v.* HUDDERSFIELD CORPORATION.
(Appeal Court).

Waterworks and the Penalties for not complying with specific statutory obligations to supply Compensation Water on account of water being taken by a Sanitary Authority from a certain Dike—Huddersfield Water Act, 1869, ss. 28, 31, 32.

The Huddersfield Corporation, by virtue of their private Water Act, 1869, has power to, and did, appropriate the water from a certain dike in connection with the construction and maintenance of their waterworks, but, as compensation to the mill-owners (and others) thereby affected, an obligation was placed upon the Corporation (under penalty) to keep the dike supplied with a specified quantity of water per minute during every lawful working day. This obligation was not fulfilled, and Mr. Justice Grantham (and a special jury) awarded each of the mill-owners (and others) affected a sum of £5 per day for each lawful working day during which there had been default by the Corporation.

Held, That the Corporation was under an obligation to use reasonable care to supply the statutory quantity of compensation water per diem, and that a *prima facie* case of neglect had been established against the Corporation; and that each of the affected mill-owners (or others) was entitled to recover the sum of £5 per day for each lost lawful working day.

Appeal dismissed.

WORKSHOPS AND FACTORIES.

PETER ROBINSON, LIMITED, *v.* METROPOLITAN POLICE
MAGISTRATE (Quarter Sessions).

Factory and Workshop Act, 1901, s. 6 (1)—What is Reasonable Temperature in a Workshop.

Dressmakers' workrooms were inspected during the month of February and found to have temperatures varying from 54° F. to 61° F. The Sanitary Authority laid down that a reasonable temperature was 60° F. to 65° F., but Messrs. Peter Robinson, Limited, held that 56° F. to 60° F. was a reasonable temperature. The magistrate convicted, and there was an appeal to Quarter Sessions, and the magistrates' opinion was not upheld.

Held, That adequate measures for securing and maintaining a reasonable temperature (56° F. to 60° F.) had been taken.

Appeal allowed and convictions quashed.

MILE END OLD TOWN GUARDIANS *v.* HOARE (Appeal Court).

Factory and Workshop Act, 1901, s. 149 (1) (a), Schedule 6, Part I (20)—Electrical Station, or Engine House and Machinery, used for lighting a Workhouse is a Non-textile Factory.

Held, That a workhouse is a "public building" within Schedule 6, Part I (20) of the Factory and Workshop Act, 1901, and that the engine house connected therewith is, therefore, a non-textile factory within the meaning of the statute.

Appeal dismissed.

THE EDITOR'S TABLE.

A Review of New Inventions, and Pharmaceutical and Dietetic Articles.

MEDICAL AND SURGICAL APPLIANCES.

Atomisers.—The universal atomiser (*Fig. 39*) which is sent us by Messrs. R. Sumner & Co. is so called because it is equally serviceable for all kinds of liquids, whether oil, aqueous, or alcoholic, and perhaps because by altering the position of a small nose-piece the spray can be sent in any direction. It is supplied with two bottles, one of which can be kept for aqueous solutions and the other for those of an oily character. A powder insufflator is also made on exactly the same lines, but the tube has a larger calibre.

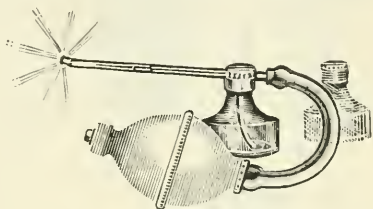


Fig. 39.

Both these instruments appear to meet the necessary indications. Mr. F. A. Rogers, of Oxford Street, sends us also his latest

production (*Fig. 40*). The spray is inserted in the bottle by means of a wide screw. This is excellent, as the indiarubber stoppers of many at present on the market are most objectionable, especially when oily solutions are being employed. We also notice that the tube of the spray comes to near the bottom of the bottle so that it may be tilted over when the contents of the bottle are very small in quantity. The maker suggests a vulcanite mount for watery solutions and a metal one for oily ones and we quite agree with him.

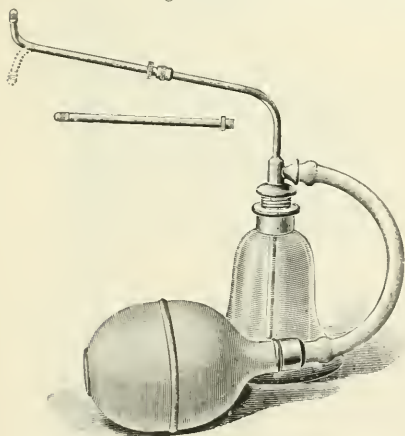


Fig. 40.

Battery, Faradic (Pocket Dry Cell).—This is a most

clever arrangement, as the whole instrument apparently consists only of two full-sized tube electrodes such as are used for an ordinary battery.

The cell and the coil are concealed in one of these handles, and it is only necessary to unite the two by a cord, press the button, and a mild current is felt in the handles which can be intensified by drawing out a button at the bottom of the electrode. But the battery can do more than this, for the other handle contains a small flat electrode of a circular shape and also an oblong pad; these can be attached to the handles, and when moistened with salt and water will give a very decided current over the part to which they are applied. Thus it would be quite possible to treat a supra-orbital neuralgia with this little battery, or relieve the pain of muscular rheumatism. It fits into a leather case which can be carried in the pocket without inconvenience. It only costs 20s. The small cells will of course become exhausted, but as these only cost 1s. each and can be replaced in a minute, this is not of much consequence. It is one of the most ingenious pieces of mechanism

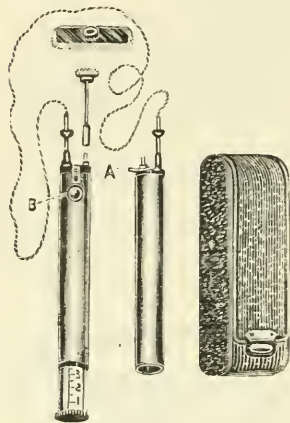


Fig. 41.

we have seen. R. Sumner & Co., Liverpool (Fig. 41).

Battist (Milne).—The Galen Manufacturing Co. Ltd. Wilson Street, E.C. are now supplying this water, spirit, and ointment proof material in widths of 42 as well as 36 inches. This will add to its utility in some cases. Its value is too well known to need confirmation.

Bed Sheeting (Impermiette).—We alluded to impermiette as a substitute for and great improvement upon jaconet in our last issue, and our experience with it in hospital practice during the past year has been most satisfactory. It looks nicer and is far more durable than any other protective we have used. The bed-sheeting produced by the Liverpool Lint Co. is made from the same material, but is much thicker, and corresponds to the ordinary indiarubber bed-sheets. It has however the advantage that it can be sterilised and washed with *boiling* water, and it remains unaffected by a number of chemicals. It is more durable, and has no tendency to spoil when not in use. We strongly recommend this sheeting in preference to indiarubber.

Cervix and Perineum Needle (Clark's).—This needle (Fig. 42) has great advantages over any other from the fact that the needle can be fixed either to the right or left or any angle, and yet be kept perfectly rigid. That is just what we want with this instrument, and it is curious that no previous effort has been made

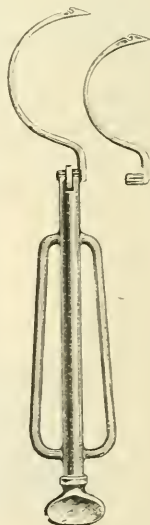


Fig. 42.

to meet it. The mechanical arrangement adopted is perfect and cannot get out of order. Price, 10s. 6d. Messrs. R. Sumner & Co., Liverpool

Clinical Thermometer ("The Repello").—Mr. G. H. Zeal, of 82, Turnmill Street, E.C., has succeeded in producing a 30-second thermometer which can be reset in an instant without shaking. There is a small, flattened bulb at the upper end, by pressure upon which the mercury is caused to descend. The mechanism by which this is accomplished is most ingenious, and can in no way impair the accuracy of the instrument. The Superintendent of the Kew Observatory has thoroughly tested it in reference to this point, and finds that the flattened bulb makes no difference to its correct registering. We think this instrument in the hands of a careful physician would prove a great luxury, but are not so sure that it would prove so durable in the hands of the average hospital nurse, whose capacity for breaking thermometers is well recognized. We must congratulate Mr. G. H. Zeal upon his very clever invention.

Couch (A Lean-to).—The consulting room of most practitioners is small, and they either have no room for the couch, or it takes up room that is badly needed. Messrs. R. Sumner & Co. have devised a couch

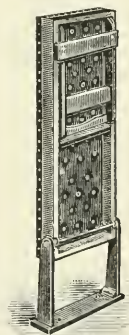
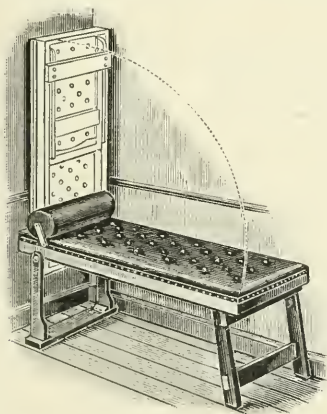


Fig. 43.

which when not in use folds back against the wall, so that it only occupies a space of 6 inches. It is well made and upholstered, and costs, including pillow, £5 5s. (Fig. 43).

"Crepe Velpeau" Bandage.—Mr. Vincent Wood sends us an excellent specimen of this form of bandage, which is useful in many cases where a gentle compression of the lint is needed, or as a support for weak joints.

Curette (The Spring-Grip).—This instrument has been introduced by Mr. Mackay MacDonald to facilitate the removal of adenoids. It follows the lines of a Beckmann's curette, but to the shaft a long

spring is fitted by means of a detachable joint, to the terminal end of which is hinged a thin plate which fits accurately into the fenestre of the curette on three sides, but with its anterior limit in contact with the bevelled surface of the blade at about $\frac{1}{8}$ of an inch from the cutting edge. As the curette is pressed on the growth the plate is forced open by the pressure of the growth on the under surface of the plate. The curette travelling backwards and downwards, the growth passes



Fig. 44.

between the blade of the curette and the edge of the plate. On withdrawing the curette the grip on the growth between the plate and the blade is sufficient to extract the growth by its interior margin. The structure is well shown in the annexed illustration. It offers many advantages over the ordinary method. The instrument is manufactured by Messrs. Mayer & Meltzer, of 71, Great Portland Street, W. (Fig. 44).

Dispensing Cabinets.—Messrs. Ferris & Co., of Bristol, have devoted great attention to the question of keeping things tidy—by which we mean that there is a place for everything and you can get at it at once. It is not their fault if our dressings and labels are not in their proper place, nor, if we use their dispensing cabinets, shall we ever have to hunt for a bottle. They have two of these, the “Bristol,” and a smaller one adapted for cottage hospitals. We have no space for describing them in detail, but Messrs. Ferris & Co. will supply particulars and illustrations to those who are seeking to economise time by having things in order. They have afforded great satisfaction to users.

Ear Model.—Dr. Ball has constructed a model of the ear (or rather two, right and left) which is furnished with twenty-five drawings in colour for each ear to represent the various pathological conditions met with in aural examinations. It will be found useful for teaching students the first principles of otology, but we think the mechanical arrangements are capable of some improvement. It is manufactured by Mr. F. Davidson, 140, Great Portland Street, W. (Fig. 45).

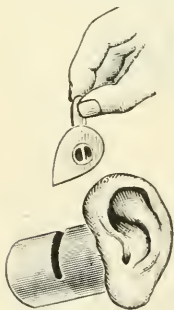


Fig. 45.

Ear Syringes.—The brass ear syringe with the bone nozzle and leather plunger has quite gone out of date. The all-metal syringe of to-day extends to the plunger, which, in the old form, used not only to get out of order, but could not be kept clean. With the metal plunger the instrument is always ready for use and can be kept perfectly aseptic.

Messrs. Ferris & Co., Bristol, send us one of the new syringes very beautifully made with a hexagonal upper rim which gives a purchase for the fingers during use and prevents the syringe from rolling when placed upon its side.

In the type sent us by Messrs. R. Sumner & Co. two rings are provided for the fingers, and there is a useful addition of a long tube-shaped nozzle which is well adapted for syringing a sinus or a wound. This is in addition to the ear nozzle of the ordinary shape.

Neither of these syringes is any more expensive than those they supersede, but they are more valuable in every way.

Elastic Stockings.—The principle that an elastic stocking should be made without seams and woven in one piece, to which we have frequently called attention in speaking of the productions of Mr. J. H. Haywood, of Nottingham, seems now to be gaining general acceptance.

Mr. Vincent Wood sends us a stocking in brown silk which is beautifully woven in one piece, and has a softness of texture not common in those ordinarily sold. They retail at about 4s. each. The London address is Victoria House, Albion Place, Blackfriar's Bridge, S.E.

Mr. Edward Huxley, of 13, Old Cavendish Street, W., carries the idea still further by weaving a stocking in which there is a change of texture in the alternate strips. This renders the pressure intermittent, and Mr. Huxley's idea is that the natural action of the valves in the veins is simulated. They are light and well ventilated, and appear to have given such satisfactory results in Mr. Huxley's hands that we are sure that our readers will be willing to give them a trial.

Enema Syringe (Reuter's).—This syringe is made entirely of vulcanite and indiarubber, which provides against any metallic combination when medicated injections are employed. This is not the only advantage of this syringe, for it is furnished with a nozzle holder containing a vulcanite valve which can easily be removed for cleansing purposes, so that the old difficulty of the syringe of becoming useless through a clogged valve cannot occur. The vaginal tube is made altogether of vulcanite, and so designed that it delivers a thin stream of water upon the sides of the vaginal passage, so that thorough cleansing is ensured. The whole construction of this syringe shows commendable thought and practical knowledge, and we can thoroughly recommend it. Messrs. Ferris & Co., Bristol, are the agents.

Evacuation Apparatus.—The evacuation apparatus designed by Mr. Thos. Morse, F.R.C.S. (*Fig. 46*), for removing stone from the bladder was made some years ago by Messrs. Down Bros., Ltd., and it has been found so satisfactory in use that it is now brought to the notice of the profession. The advantage claimed is the ease with which the apparatus can be emptied. The operator, without any assistance, and even without disconnecting any of the attachments, can empty and re-fill the instrument with scarcely any interruption to the operation. The instrument having been filled by the tube attached to the top, which is the same as in the Bigelow's apparatus, the tap A is turned off. The cannula

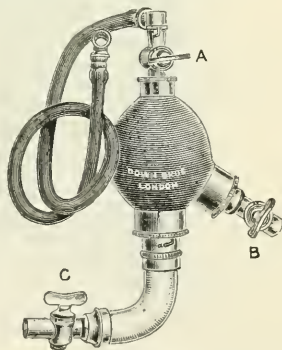


Fig. 46.

then being attached, tap B is turned on. By squeezing the ball several times it is probable that the glass receiver will contain water that is turbid with blood and débris of the stone. Tap B is now turned off, and by turning on tap C and squeezing the bulb the whole of the contents of the glass receiver and of the bulb are run off into a basin. Tap C is then turned off and the instrument re-filled from a jug through the tube attached at A as before. The operation can now be proceeded with, and the same process repeated as often as necessary.



Fig. 47.

“Ever-ready” Pedestal.—This is an amplification of the “ever-ready” cabinet which we have described in our previous issues. It contains additional accommodation for splints, dressing trays, and

the various appliances required for fractures, etc., as well as for dressing wounds. The general arrangement will be well understood from the illustration (*Fig. 47*); it occupies very little space and provides a definite place for everything required to meet an emergency. It is well adapted, not wholly for the surgery of the practitioner, but also for factories and works where surgical emergencies are likely to arise. Messrs. Ferris & Co., Bristol, are the manufacturers.

Film Dressing (Velvрил).—Velvрил is one of the cellulose derivatives, and can be produced in sheets of any thickness. It is yellow in colour and semi-transparent. It has been used as a dressing for wounds in the following manner: The wound after operation is swabbed with acetone to remove all moisture, then a space for an inch on either side of the wound is painted with velvрил solution, and the wound is covered by a 2-inch strip of velvрил film, which is kept in position by a pad of wool and bandage. To examine the wound it is only necessary to remove the pad and moisten the film, when it becomes transparent. The film can be easily removed by placing a wet swab upon it for a few minutes. This method of treating wounds, strict aseptic precautions being observed at all stages, has given excellent results, as the air is excluded and perfect apposition obtained. The "film," and the "solution" can be obtained from Messrs. Thos. Christy & Co.

Follicular Tonsillitis (Dilator and Curette for).—The Crypt dilator and curette shown in the illustrations have been made for the treatment of chronic follicular tonsillitis of limited extent by the electric cautery. The former will be found to differ considerably in its mechanism and character from most of the better known instruments. It is finer in the point, lighter to the hand, more easily adapted to either side, and

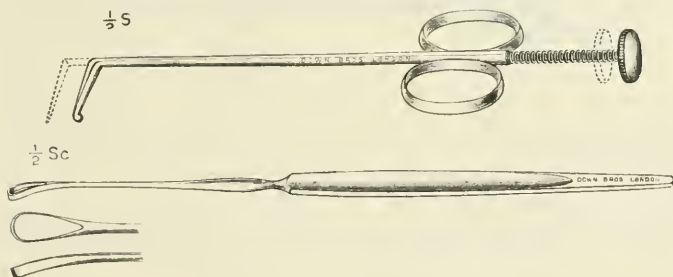


Fig. 48.

better suited to the gradual and forcible dilatation of the tonsillar crypts. The curette is a double-edged one, the loop being set at a slight angle; by this means crypts lying far back in the tonsil are easily reached and evacuated. Mr. McGavin states that the instruments have proved very satisfactory in use. They are made by Down Bros., Ltd., 21, St. Thomas's Street, London, S.E. (*Fig. 48*).

Gauze (Acetate of Aluminium).—The Galen Manufacturing Co., Ltd., have introduced a ribbon impregnated with the above salt. It has been found particularly useful in wounds of an unhealthy nature, being non-poisonous and perfectly antiseptic.

Gland Forceps.—The modified form of Kocher's forceps shown in the accompanying drawing has been made by Messrs. Down Bros. from the design of Dr. Ashley Cummins, of Cork. The following

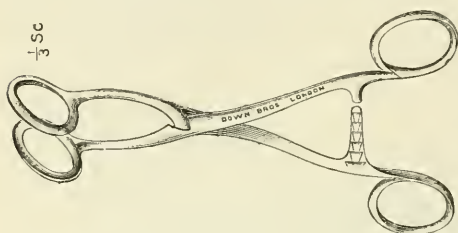


Fig. 49.

advantages are claimed for this forceps in the operation for the removal of tuberculous lymphatic glands: (1) That it can be used with a very small incision; (2) That a great number of glands can be removed through one small incision without injury to the deep vessels to which they are often so closely adherent; (3) That deep glands can be lifted and separated with facility, and withdrawn without danger of bursting and infecting the wound. (*Fig. 49*).

Guillotines for Tonsils.—Beehag's improved tonsilotome (*Fig. 50*) which has been sent us by Messrs. R. Sumner & Co., of Liverpool, may be described as a combination of Mackenzie's and Matthew's patterns improved. The blade is pushed from before backwards, and in doing so the tonsil is grasped by forceps which draw the tonsil outwards



Fig. 50.

and render the operation more certain and effective. The points of these forceps project a little beyond the ring which encircles the tonsil, and this would offer some obstacle to placing it in position and cause some scratching of the tissues. This defect might easily be removed in making other instruments of the same pattern.

In all these guillotines the knife has been pushed from before backwards. In a guillotine submitted to us by Messrs. Ferris & Co., of Bristol

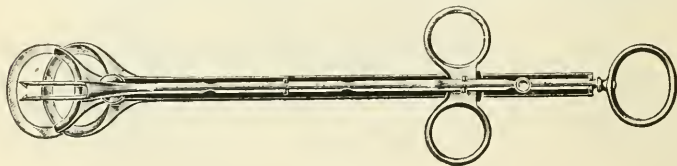


Fig. 51.

Fig. 51), the blade cuts from the back of the tonsil to the front, so that the motion of the surgeon's hand is one of pulling instead of

pushing. But while pulling with the fingers as in the act of using a snare it is necessary to push with the thumb, and this natural effort is made use of in the construction of this instrument in the following way: The first effect produced by the surgeon in drawing his fingers and thumb together causes the tonsil to be transfixcd from before backwards by two sharp needles; as he continues his pressure these needles draw the tonsil away from the side of the throat, and it is not until this has been done that the blade of the guillotine comes forward and severs the tonsil. The whole movement is apparently instantaneous, but we have described it in detail to show the beautiful nature of the mechanism. It is a vast improvement upon the Mackenzie type of instrument, and makes the operation one of the simplest in surgery. We may say that the bulk of the instrument which has to be passed into the mouth is far less than in the older patterns, and this is in itself a very great advantage.

Hammer Toes (Splint for).—The "Tomato" splint is designed by Mr. W. Thomas, F.R.C.S., for the cure of hallux valgus and hammer toe, and for the general treatment of deformities of the toes. It is constructed of aluminium, and made in six sizes, which readily adapt themselves to the individual foot. Formed of this material, it serves as a splint, fitting to the under surface of the toes, affording a groove in which each toe lies in the normal position. The posterior border is concave and rests against the heads of the metatarsal bones. The upper surface has three grooves, one for each of the middle toes, and two incomplete grooves for the great and little toes. Between the grooves are raised septa, the one between the great toe and the next being higher and thicker than the others; the septa are pierced so as to allow the strapping, tape, or bandage by which the splint is fixed to the toes to pass through. In using the splint it is only necessary to apply it to the under surface of the toes, and to fix it rather loosely with strapping or a piece of narrow flannelette bandage. The sock or stocking is then drawn over and thus prevents the drawing in together of the toes, which plays such an important part in toe deformities. It may be worn at night inside a stocking, in a slipper or loose shoe during the day, or even in a boot if the boot has room enough to contain it with comfort. Much may be done to correct deformities of the toes; no severe or painful measures are required; properly applied and regularly worn it gradually brings some of the most distorted toes to the normal condition. The makers are Down Bros., Ltd., 21, St. Thomas's Street, London, S.E. (*Fig. 52*).

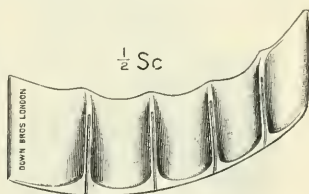


Fig. 52.

Hypodermic Syringes.—Messrs. Parke, Davis & Co. send us a neat case containing a glass syringe and three needles. In this syringe the glass piston is furnished with a minute indiarubber ring upon which its power of suction depends. The case is furnished with a supply of these rings so that they can be instantly replaced. This arrangement permits of a more elegant syringe being produced than is customary with glass syringes, and no fault can be found with it

on antiseptic or practical grounds. The case also contains four tubes of hypodermic pellets. The whole is enclosed in a neat bag which protects the case from being tarnished.

Messrs. Ferris & Co. send us an "all glass" hypodermic syringe, in which by a very ingenious arrangement there is formed a small cushion of air between the piston and cylinder which prevents the breakage of the latter, which not infrequently happens with syringes of this type. The very great advantage of this form of syringe is that it is always ready for use, and no trouble with the piston can occur. This syringe is furnished with platinum iridium needles, which can be thoroughly asepticised by exposing them to the flame of the spirit lamp. These needles are much more durable and satisfactory than steel needles, and we are glad to see that Messrs. Ferris & Co. supply them at 2s. each, as in our opinion the platinum needle should be invariably employed.

Infirm (Aids for the).—The O'Connor Extension Co. again sent us specimens of their ingenious appliances for relief of various deformities of the feet. The principle of giving support without any visible appearance, of such support to the onlooker is a merit in itself, but apart from this they are anatomically correct, and distribute the pressure evenly over a wide surface, so that they secure the minimum of discomfort. The offices are 2, Bloomsbury Street, W.C.

Inhalers.—We have always hoped that from the many inhalers at present in use, each with its own peculiarity, someone might evolve

a practical instrument which would meet all the needs of the practitioner whether he wished to administer chloroform, ether, or chloride of ethyl. This has always seemed possible, and with the "Hatch universal inhaler" (Fig. 53) it has been proved to be practical. This inhaler is perfectly simple, and its advantages appeal to one after the most cursory examination. The face-piece is transparent celluloid, so that the features are always visible. It is furnished with an inflatable pneumatic rim, which can be removed when giving chloroform. It has a metal box which admits of a diaphragm which holds the lint upon which the anæsthetic is placed. The box is accessible both from the front and back, and can be cleaned and polished on its inner surface, so that it is perfectly aseptic. The box has a small funnel in its upper part by which the anæsthetic is conveyed to the

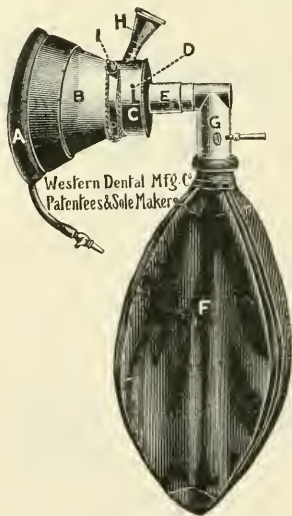


Fig. 53.

nt. A large tube connects the chamber with a large rubber bag, and is furnished with a valve which will shut off or admit air during the

administration of ether. When used for chloroform the bag and the back of the chamber is removed so that air is freely admitted. For the administration of chloride of ethyl, somnoform, etc., the anæsthetic is sprayed direct on the lint. The air valve is at first opened fully, and then after a few inhalations it should be gradually nearly closed. If in forty seconds anæsthesia is not complete, the valve is closed entirely and the patient will breathe backwards and forwards into the bag. It will be seen how readily this inhaler adapts itself to the administration of anæsthetics, and how simple is the construction. We find that it weighs when complete only 11 ounces, and costs from 37s. 6d. It does the work of three different inhalers, and does the work of each better than any other we have examined. This is decidedly the inhaler which the practitioner will be safe in purchasing. It is made by the Western Dental Manufacturing Co., of Bristol, and we understand Messrs. R. Sumner & Co., Liverpool, act as agents for them.

A Wide-bore Ether Inhaler has been introduced by Dr. Probyn Williams, who desires to remove the disadvantage of the narrow tube of the Clover. The benefit of the increased bore is shown by quieter

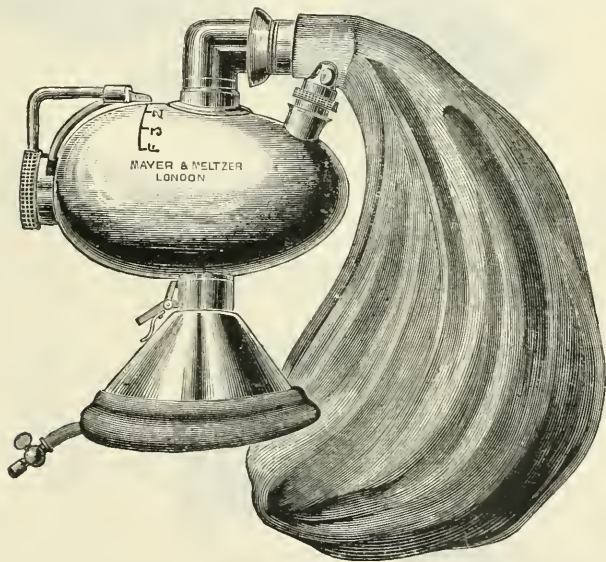


Fig. 54.

respiration, less cyanosis and secretion of mucus and saliva. The inhaler has also many other improvements upon the ordinary Clover, and is more comfortable to hold on account of its shape; it is also 6 ounces lighter. It is made by Messrs. Mayer & Meltzer.

A New Spring Collar for Ethyl Chloride Narcosis has been introduced by Dr. A. de Prenderville. The aim of the inventor is to prevent the

lint lining upon which the chloride of ethyl is sprayed from being disturbed during inspiration, and to enable fresh lint to be used in each case. It is made by Mr. J. H. Montague, of 101, New Bond Street, W.

An Ethyl Chloride Inhaler has been designed by Mr. G. W. Bampfylde Daniell. The construction of the apparatus will be understood from the annexed illustration. The inventor claims that it permits a

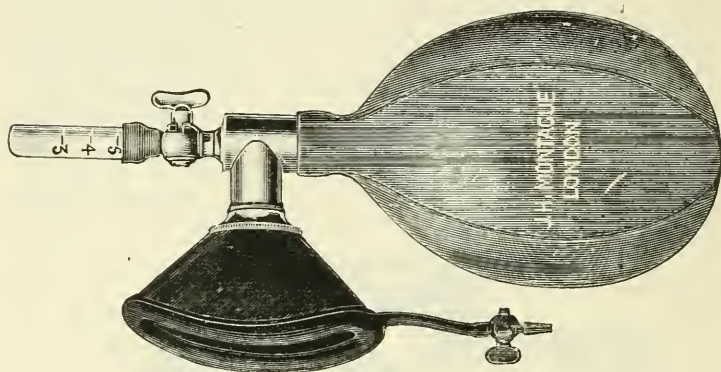


Fig. 55.

measured quantity to be given, and that there is a perfectly free air-way and no lint or wool to breathe through, and that it economizes the amount of anæsthetic used. It is made by Mr. J. H. Montague, 101, New Bond Street, W. (Fig. 55).

Somnoform Inhaler.—The accompanying illustration (Fig. 56) represents an apparatus made for Mr. R. H. Jocelyn Swan, M.S., and has been

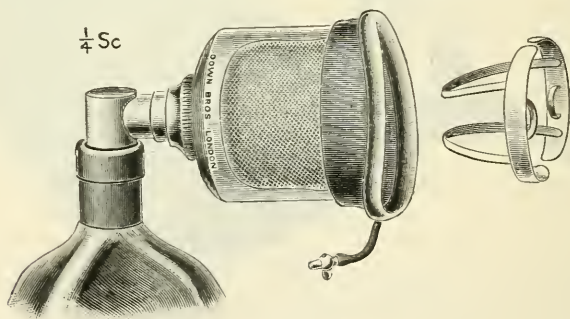


Fig. 56.

used for some months for the administration of somnoform, and consists of a celluloid face-piece connected by means of a right-angled metal tube to a rubber bag. The face-piece is lined with lint,

which is maintained in position by a special spring, horse-shoe in shape, preventing collapse of the lining during any deep inhalation by the patient. The lint can be thus readily changed and a clean piece substituted. In using this apparatus the dose of somnoform required for a single administration, and producing an anæsthesia averaging from 90 to 120 seconds, is about $2\frac{1}{2}$ cm., *i.e.*, half the dose of the drug marked on the bottles in which it is supplied for use with the handkerchief cone adopted by Dr. Rolland. The makers are Down Bros., Ltd., 21, St. Thomas's Street, London, S.E.

Intestine Twin Clamp Forceps.—The accompanying illustration (Fig. 57) represents some anastomosis forceps made by Messrs. Down Bros., Ltd., for Mr. T. Carwardine, M.S., and which other surgeons may find useful. They consist of two forceps, each $6\frac{1}{2}$ inches long, with very slender, well-tempered, spring-arched blades $\frac{3}{16}$ of an inch wide. These may be covered with indiarubber tubing, and the compressing force is so slight and yielding that the gut is not injured by their application. To one forceps a thumb screw is attached, concave on the surface and $\frac{1}{2}$ inch in diameter. It is so made as not to

become completely detached, and therefore cannot be mislaid. The other forceps has a slot and depression corresponding to and receiving the thumb screw when the two forceps are combined. For use, the gut beyond the part for removal is clamped by the separate forceps, and the diseased bowel excised, leaving sufficient gut beyond the forceps to admit convenient suturing. Then the two forceps are clamped together in parallelism, the combination being conveniently held in one hand. For suturing, a posterior peritoneal stitch may be first inserted and then the mucous and muscular coats united. Finally,

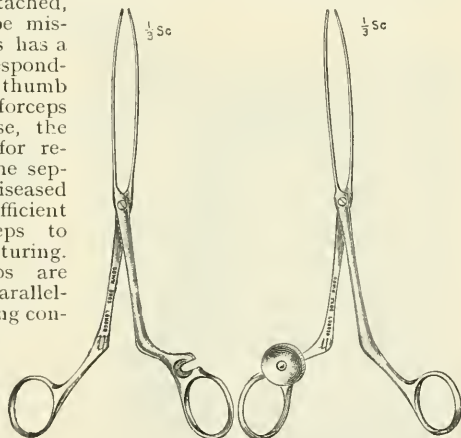


Fig. 57.

the posterior peritoneal stitch is again picked up and used to unite the anterior peritoneal surfaces. The chief advantages of this instrument are the possibility of union in layers, the steady approximation of the ends of bowel for anastomosis, the use of only one hand for holding the approximated ends, the absence of any marked internal diaphragm when the union is complete, and the availability of the independent forceps for use as intestinal clamps.

Intra-Uterine Tube (Flexible).—This is a gum elastic tube, the upper part of which forms an open canal, the lower part being furnished with an inlet and outlet tube. It has the advantage over most similar appliances in the fact that being made of gum elastic it adapts itself to the parts and may be introduced without fear of injury. As it

stands washing in boiling water, there is no difficulty in rendering it aseptic. It is designed by Mr. G. E. Porak and introduced by Messrs. Ferris & Co., of Bristol. Price 5s. 6d.

Invalid Bedstead (Whitfield Patents).—This in general design is similar to the Lawson Tait spring hospital bed, which is well known to the profession for its excellence and durability. The special invalid bed has an arrangement by which it is only necessary to turn a handle at the foot of the bed to raise the patient to the sitting or semi-reclining position without disturbing the body in any way. The construction is very simple and ingenious and there is nothing which can get out of order. The *epileptic bedstead* is furnished with a rail on both sides, so that it is impossible for the patient to fall out of bed. It is often convenient to know that such a bed is obtainable. They are manufactured by Messrs. Geo. Gale & Sons, Ltd., Dominion Works, Birmingham, who also make bedsteads suitable for fractures and other surgical purposes.

Label and Paper Cabinet.—Messrs. Ferris & Co., of Bristol, introduce a very compact cabinet for various papers and labels used for dispensing purposes. It is furnished with divisions for slip and circular labels and powder envelopes. The arrangement will be readily understood from the annexed illustration. (*Fig. 58*).

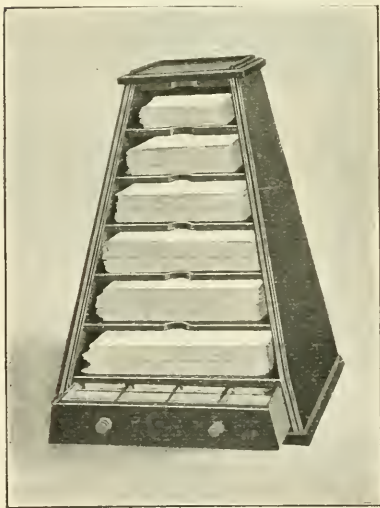


Fig. 58.

Labels for Surgery Bottles.

—Messrs. Ferris & Co. issue a label of shield shape giving the name of drugs in common use in bold type, with the dose plainly marked upon each. They adhere very firmly to the bottle, and are unaffected by spirit or by acids. They cost only 1s. 6d. per 100, and we strongly recommend them to our readers.

Lamp (Portable Electric).—

Messrs. Thos. Christy & Co., of Old Swan Lane, E.C., have introduced an electric lamp, for illuminating the throat and other cavities, of a very portable and ingenious character. The electric lamp can be used

alone, when it will conveniently illuminate a vaginal or rectal or nasal speculum. With the throat mirror attached it can be used for laryngoscopic examination, and this is assisted by the fact that the mirror has a tongue depressor in combination with it. The whole apparatus folds into a neat leather case measuring only $4\frac{1}{2}$ by $1\frac{3}{4}$ inches, so that it occupies very little space in the physician's or surgeon's bag. It is the more useful because it so readily adapts itself to a number of different purposes, and meets requirements which

recur with great frequency. The cells when exhausted can be easily replaced and are very inexpensive. We think this little apparatus will be appreciated by every practitioner who uses it, being a distinct improvement upon similar appliances at present in use.

Mouth Gag.—We illustrate here a new gag introduced by Dr. A. de Prenderville, who claims that the linear arrangement of the blades allows of easy and rapid introduction. It is manufactured by Mr. J. H. Montague, 101, New Bond Street, W. (*Fig. 59.*)

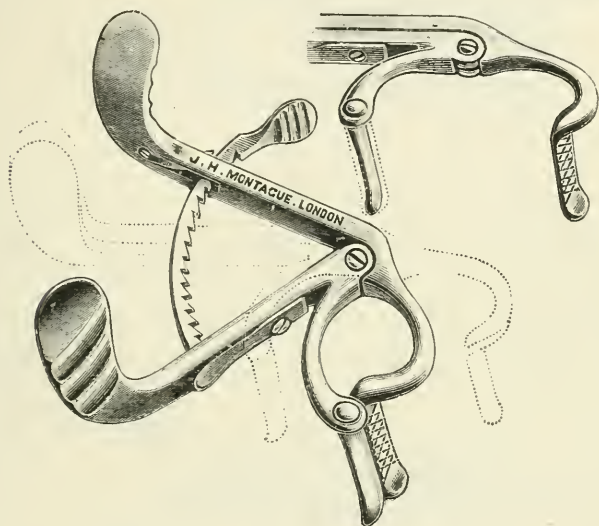


Fig. 59.

Operating Aprons (Muslinette).—This is a light apron, impervious to fluids, which will fold into a small compass, and is capable of being washed in hot water and antiseptic fluids. It is supplied by Messrs. R. Sumner & Co., of Liverpool, and costs 7s. 6d.

Operating Gauntlets.—Messrs. R. Sumner & Co. also send us some indiarubber gloves for operating purposes, so thin and transparent that they do not appear to deaden the sense of touch at all. They reach far up the wrists and afford perfect protection. A powder is supplied with them which greatly facilitates putting them on. They are an improvement on the older kinds, and cost 3s. 6d. per pair.

Operation Table (Gynæcological).—Dr. Spencer has designed a new couch for the Gynæcological operation theatre of the New University College Hospital. It possesses many ingenious and novel features, the description of which is beyond the limits of our space. It is made by Messrs. Mayer & Meltzer, who will supply an illustrated descriptive circular on application.

Ophthalmic Bottle.—Mr. Martindale, of 10, New Cavendish Street, W., has, at the suggestion of Mr. W. Lang, F.R.C.S., manufactured a series of bottles for holding ophthalmic solutions, such as cocaine,

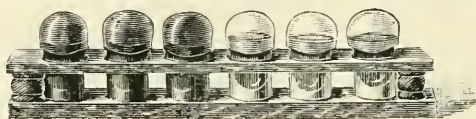


Fig. 60.

being dome-shaped, leaves no ledges where dust can collect. The bottle holds a glass pipette, which is useful for applying the solution, and which is also thus preserved from dust. It is a practical little article and might serve many other useful purposes (Fig. 60).

Optical Instruments.—It frequently happens that a persistent headache, a neuralgia, or general condition of neurasthenia is due to some defect of vision or error of refraction, and the practitioner who cannot determine the point and must send his patient to an oculist is at a disadvantage. Mr. F. Davidson, of 140, Great Portland Street, W., has devoted much time and ingenuity to rendering the process of testing for refractive errors not only more simple, but more expeditious, and during the past year we have given his method an extensive trial, with very satisfactory results. The most important of his appliances for the general practitioner is the double optometer. This consists of two wheels upon which are mounted the various lenses, convex and concave, for testing vision, so that any pair can be brought into position instantly, and this represents a great economy of time and has the advantage that by passing, say, three glasses before the eye in instant succession better results can be obtained than when a delay occurs between the introduction of each glass. This double optometer, together with a most ingenious chart, which is unquestionably the best in the market, represents all that the practitioner requires for ordinary work, and we should personally be sorry to be without either. Mr. Davidson has brought before us a number of other special appliances, amongst which we may mention a "model eye," the invention of Mr. H. Percy Dunn, F.R.C.S. It is intended for the practice of retinoscopy, and is furnished with coloured discs illustrating all the abnormal conditions met with in making such examinations. It is also useful for testing errors of refraction. It is inexpensive and will be found most useful to those who need to improve their knowledge of the subject. Mr. Percy Dunn has also invented a "retino-disc," which is a series of lenses mounted on a wheel, and it is intended that the patient should hold this before the eye and revolve it under the direction of the surgeon so that successive lenses are brought before the eye. The method saves time in testing for refraction.

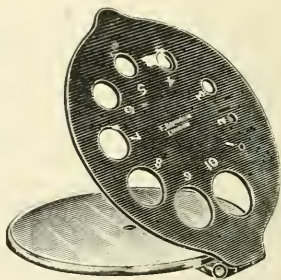


Fig. 61.

Mr. Davidson also sends us a combined retinoscope, pupillometer, and colour test (*Fig. 61*); it occupies no more space than an ordinary ophthalmoscope and costs no more. It is impossible to give space to the full description of these appliances, but the practitioner interested will doubtless apply to Mr. Davidson for particulars.

Otoscope.—Dr. J. B. Ball has designed a new otoscope which is small and very portable. The interior of the instrument and the specula are of a dead black instead of being polished as usual, and



Fig. 62.

the result is that the image comes out with striking clearness. It is a very practical instrument, and is made by Mr. F. Davidson, 140, Great Portland Street, W., and costs 18s. 6d. (*Fig. 62*).

Paraffin Syringe.—This syringe (*Fig. 63*), designed by Mr. D. Middleton Greig, F.R.C.S., has been constructed by Messrs. Down Bros., and is a modification of Eckstein's syringe for the injection of paraffin in sunken noses, etc., which will be found an improvement on the original, and which can be specially recommended for beginners and those who seldom have the opportunity of practising this kind of work.

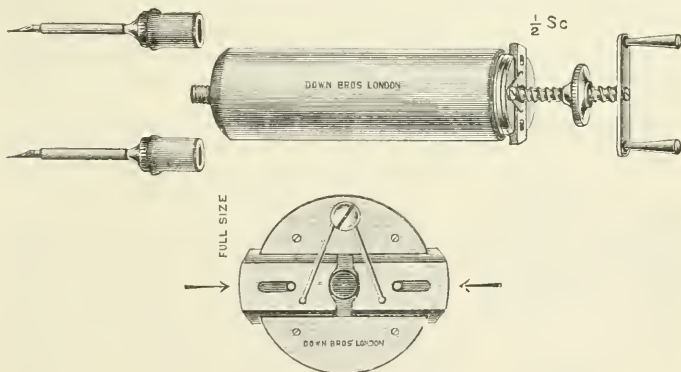


Fig. 63.

The syringe is of solid metal with screw-on nozzles, and is all cased in rubber. When the syringe, thoroughly heated, is filled with paraffin melted at 104° it is found to keep the paraffin in a fluid state for about five minutes in a warm room, thus giving ample time to carry out even a delayed operation. In all such work the difficulty is the

tendency of the paraffin to solidify in the lumen of the needle, the unrubbered metal point of which is rapidly cooled to the body temperature on being introduced under the skin. When this occurs, enormous force is required to expel the trifling plug from the needle. This has been overcome by having the piston rod cut with a screw thread. On the top plate of the cylinder there are two plates running in grooves, and kept apart by a spring. The adjacent ends of these plates are cut to fit the thread of the screw on the piston rod. When the plates are apart the piston can be worked as an ordinary syringe, but if it becomes necessary to apply force to the contents of the cylinder, the plates are approximated; the piston can then be screwed into the cylinder instead of being pushed, and the plug of solidified paraffin is thus easily forced out.

Physician's Phaeton (The Columbus).—This will interest those of our readers who have long distances to travel. It is very light and runs easily, and is declared to be quite free from knee-motion by practitioners who have used it. The step is low, and ingress and egress is very easy. It only costs 35 guineas, with extra for hood and rubber tyres. It is produced by the Columbus Carriage Co., 118, Great Portland Street, W., and is well worth the attention of our readers, some of whom have already tried it and express themselves highly pleased with the comfort it affords.

Picric Acid. Lint and Gauze.—The value of picric acid as an external application to weeping surfaces such as occur in eczema, abrasions, and burns, is becoming generally recognised. It acts as an astringent, and analgesic, and antiseptic. We are glad to see that Messrs. Ferris and Co. have added lint, gauze, and wool, impregnated with this acid to the contents of their Ever Ready Caddies. They have also a caddy containing picric acid tissue (which resembles a thin "Gamgee") the whole impregnated with picric acid. We believe that these dressings will prove invaluable for the every-day emergencies of daily practice, except in those cases where pus occurs, when an astringent dressing is not so desirable.

Plugging Gauze (Astringent).—This is another addition to Messrs. Ferris & Co.'s excellent series of spools. Its purpose and use is evident, and we think that it is a spool which we shall be careful our caddies contain.

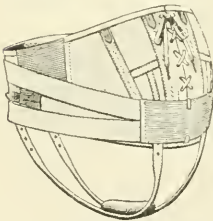


Fig. 64.

Prolapsus Uteri Support.—The "Domen" Belts Co., 456, Strand, W.C., have brought out a support for a prolapsed uterus, but which will find more general use as a support in cases of prolapse of the rectum. It is attached to one of their well known belts, which have already received favourable notice in the *Medical Annual*. The nature of the support will be understood from the illustration (Fig. 64).

Scales (Baby).—In these days of scientific accuracy the mother is not satisfied with the fact that her babe is the finest that has been born, but is anxious to establish the fact by the process of actual weighing. Messrs. Ferris & Co. have introduced to us a spring

scale so small that it can be carried in the pocket, but which will weigh up to 15 lbs. A scale of this character would be useful to the practitioner for many purposes, and amongst others if the habit was cultivated of weighing the baby once a week, it would afford some exact evidence that its nutrition was all that could be desired. The cost is 4s. 6d.

Serum Syringe.—Lüer's Patent Syringe is made entirely of glass, and is graduated either in minims or c.c. The glass piston occupies nearly one half the length of the cylinder and is very efficient. This syringe fitted with platinum needles is a perfectly aseptic instrument, which can be used with confidence both for sera and all forms of hypodermic medication. A 2 c.c. syringe in neat metal case costs 17s. The very great advantage of this syringe is that if it should happen to be unused for months at a time, it would always be ready for immediate employment. There is nothing to go wrong, and the piston is always in proper condition. It can be obtained of Messrs. Ferris & Co., of Bristol.

Sputum Flask.—This is made entirely of glass. The patient expectorates into a large cavity at the side of the bottle, and by a half turn of the stopper the bottle is closed and the sputa thrown into the cavity provided for its reception. The arrangement is exceedingly ingenious, and as the cost is only 2s. we do not think anything better can be found. Messrs. Ferris & Co. also send this.

Stethoscopes.

Messrs. Ferris & Co., of Bristol, have introduced a bin-aural stethoscope, which is rendered more portable by having a joint in the centre of the spring, which enables it to be folded upon itself. The spring is necessary to the bin-aural stethoscope because the ear conducting tubes are made of metal, and it is necessary to have some pressure to retain them in contact with the ear, but if the metal tubes are replaced by flexible india rubber the necessity of the spring disappears, and with it the uncomfortable pressure upon the ears produced by it. Personally we regard this invention as an improvement upon an obsolete pattern, but we have no doubt that there are practitioners who have accustomed themselves to this instrument and who will appreciate the advantage which the folding spring gives.

The *Microphone* is the name given to the latest production of the newer type of stethoscope (*Fig. 65*) which started with the phonendoscope. This consists of a metal disc not larger in circumference than a shilling and less than an inch in thickness. To this is attached two flexible rubber tubes provided with ear pieces. The sound is increased by a transparent celluloid disc, which can be renewed if necessary. We found both in auscultating the heart and lungs that the sounds were intensified without being confused. This can be carried in a neat leather purse in the breast coat pocket, without making its presence noticed. It is very efficient, and costs with purse included 5s. 6d. Messrs. Sumner and Co. supply this instrument, which we strongly recommend.

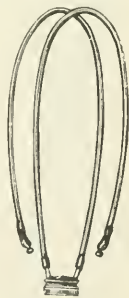


Fig. 65.

Mr. Hawksley, of 357, Oxford Street, has made for Dr. Aitchison Robertson, a *multiple stethoscope*, so that a number of students can

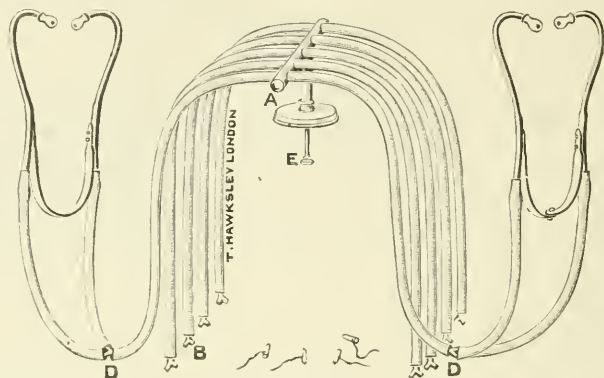


Fig. 66.

simultaneously listen to the same sound. The construction will be readily understood from the annexed illustration (Fig. 66).

Suturing Wounds.—Messrs. Ferris & Co. have brought under our notice a needle holder which in addition to the advantage of engaging and releasing the needle by pressure in one direction, is also furnished with a reel for containing the suture which, passing through an eye at the distal extremity of the needle, enables a continuous suture to be made with great rapidity and saving of trouble. The construction of the instrument is very ingenious. It enables the whole operation of suturing a wound to be undertaken without touching the parts with the fingers, and keeps the suture itself protected from contamination during operation. The arrangement is as simple as it is ingenious, and every part is easily rendered aseptic. We believe it will be warmly appreciated by every surgeon who uses it.

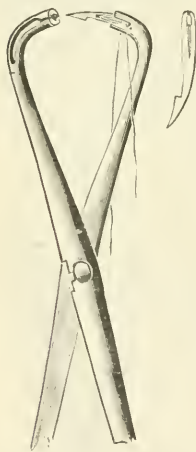


Fig. 67.

We are indebted to Messrs. R. Sumner & Co., of Liverpool, for bringing the following aids to the suturing of wounds under our notice. *Kurz's Suture Forceps* is represented in the illustration (Fig. 67). It will be seen that a small needle which has been threaded, is placed in one arm of the forceps, and when this is passed through the tissue by simply closing the forceps, the needle is transferred to the other arm of the forceps carrying the thread with it. The two ends of the thread are then drawn together and tied, the needle being removed from

the arm to which it was transferred, by giving it half a turn, when it can easily be withdrawn and placed in the other arm for the next stitch. The whole process is simpler in practice than in description. The arrangement is one of a remarkably ingenious character, and is well adapted for those cases where it is not necessary to pass the suture deep into the tissues. The appliance with two needles costs 10s.

Another simple aid to suturing, brought forward by the same firm, is a *Suture Clamp Forceps*, the nature of which can easily be seen from the figure (Fig 68). It brings the edge of the wound together, and the needle is passed through the aperture or bridge between the two blades of the forceps. The very practical nature of the instrument will at once suggest itself to the reader. It permits the sutures to be adjusted with great accuracy, and obviates touching the wound with the fingers. It is an instrument well worth having, and costs but 5s. 6d.

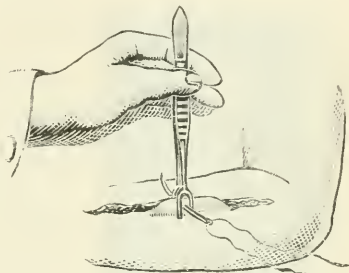


Fig. 68.

Mich-V's Suture Set (Fig. 69) is also brought to our notice by Messrs. R. Sumner & Co., and is as novel as it is ingenious, for it dispenses with sutures altogether. It is intended only for superficial wounds, especially those of the head and face, where the marks of the sutures would be a disfigurement. The method consists in the use of metal clamps, which bend easily

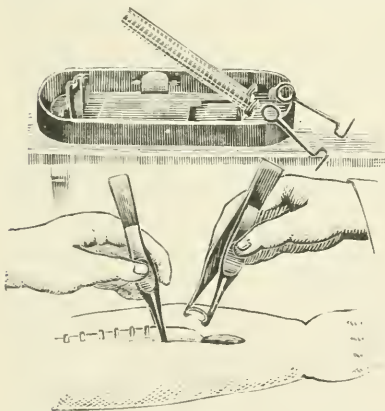


Fig. 69.

with the pressure of the forceps, and being furnished on their inner side with two sharp projections like fine needles, the wound is held firmly together. These clamps can be purchased at the rate of 3s. 6d. per hundred, and the apparatus consists simply of a number of these clamps and two forceps especially constructed for holding the wound together with one while the clamp is put on with the other. It enables a wound to be "sutured" not only with great rapidity but with great accuracy. We understand that these clamps are largely used by French surgeons and highly thought of. We may add that the

clamps are removed by inserting a metal hook into either side of the clamp and simply pulling it apart. The clamps are looped to allow

of this, and small hooks are provided as a part of the outfit. The whole is furnished in a metal case for 10s. 6d. It represents an undoubted advance in the method of suturing superficial wounds, and permits of the most complete aseptic treatment.

Test Type Cabinet.—This set of test types has been devised by Mr. Charles Wray, F.R.C.S., and is to be used with a mirror at 3 metres. The cabinet is placed on a low

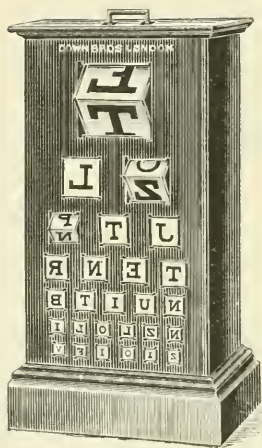


Fig. 70.

table and the patient stands immediately behind with the test glasses between him and the cabinet. If he complains of inability to read small type but sees well in the distance, the examiner puts his finger on a letter of $\frac{6}{6}$ and whilst the patient looks in the mirror, he simply asks, "What is this?" and turns the cube to test the patient's accuracy. If near and distant vision is defective, the examiner puts a finger on $\frac{6}{6}$. If the patient complains he cannot see in the distance, but can see to read well, the finger is placed on $\frac{6}{60}$. These test types have been used at the Croydon Hospital for twelve months, and it is found they save from 40 to 60 per cent of the words used in examination, and from 60 to 70 per cent of the time. Unquestionably the new test type saves time and energy, and is a great aid to accuracy when dealing with unreliable patients such as children and seniles. Moreover, the examiner can show 4 letters in $\frac{6}{60}$, 16 combinations in $\frac{6}{36}$, 64 in $\frac{6}{24}$, 256 in $\frac{6}{18}$, 1024 in $\frac{6}{12}$, 2048 in $\frac{6}{6}$,

and so on, the type therefore being unlearnable. Messrs. Down Bros., Ltd., are the makers (Fig. 70).

Toilet Pocket Books.—This name requires explanation. It is given to two different books which are intended for the pocket, when they are not so large as to find a more convenient place upon the dressing table or the dressing bag. One of these books contains a superior kind of toilet paper, and is intended to meet certain fundamental requirements in a better way than that which chance alone metes out to us. For invalids who cannot leave their rooms we have found these "Pocket Books," which can be purchased from a penny upwards, most acceptable. Another toilet pocket book contains Japanese handkerchiefs, and these we have found invaluable for consumptive and bronchitic patients, as well as for a number of other purposes when one wants to wipe up something nasty and commit it to the flames as soon as possible. We understand that the Toilet Novelties Co., of Bristol, supply these handkerchiefs in bulk to the medical profession at very cheap rates, and we can only say that those who have become accustomed to use them find it difficult to do without them, so useful are they for many purposes. Both are put up with great taste, and will doubtless be much appreciated.

Vinode is the name given to a wool apparently strongly impregnated with iodine, which has been brought forward by Mr. Vincent Wood, but we have no particulars of its composition. It is intended as an external application in inflammatory conditions.

Zinc Adhesive Plaster.—This is a nice plaster with a white back, and very adhesive and unirritating. We prefer it to all others for the strapping of wounds. It is made by Ferris & Co., Bristol.

PROGRESS OF PHARMACY.

Adrenalin and Cocaine.—The advantage of combining adrenalin with cocaine has been pointed out frequently during the year. It renders superficial operations bloodless as well as painless. Messrs. Parke Davis and Co., 111, Queen Victoria Street, E.C., whose solution of adrenalin chloride 1-1000 (Takamine) we commented on last year and have used with most reliable results during the present, have brought out a tablet consisting of cocaine gr. $\frac{1}{8}$ (without any excipient) for the extemporaneous making of this combination. As pure cocaine solution does not keep well, we think these tablets will meet a distinct want, and will prove useful for many other purposes where cocaine is required.

Anthrasol is practically a tar from which all the pitch and colouring matter is removed. It appears as a pale yellow fluid with an unmistakable odour of tar. It has a greater power of skin penetration than ordinary tar. It is miscible with absolute alcohol, fatty oils, paraffin and similar vehicles. In the treatment of cutaneous diseases it finds many uses, and must be regarded as a distinct improvement in pharmacy, as it facilitates the application of the therapeutic properties of tar in a remarkable degree. Mr. B. Kuhn, 16, Rood Lane, E.C., is the agent.

Antiphlogistine.—In our last issue we described some experiments we had made with a peculiar substance somewhat resembling putty, which had been brought out by the Denver Chemical Manufacturing Co., 110, Cheapside, E.C., under the above name. Since then we have used it for a patient aged 86, with general œdema of the limbs. We spread sufficient to cover the back of the legs from the heels to the knees, about $\frac{1}{8}$ inch thick upon lint, retaining it by a domette bandage. The effect was to cause a steady drain of fluid from the tissues, causing the cotton-wool placed beneath the limbs to become saturated. This continued for seven days, when we renewed the application. The relief to the œdema was so remarkable that we think this method represents a real advance in medical knowledge. The best results are obtained when it is used freely, but the price at which it is sold renders this rather prohibitive in general practice. A tin holding 10½ ounces costs 2s., but a hospital tin containing 5 lbs. costs 10s. This is rather an expensive form of poultice as it is a heavy material.

Apiol Capsules (Compound).—An elegant capsule containing apiol 2 minims, ergotin 2 grains, oil of savin 1 minim, aloes $\frac{1}{2}$ grain, is about as good an emmenagogue as we could wish to have. It is put up by Messrs. R. Sumner & Co., of Liverpool.

Aristochin.—This is a tasteless derivative of quinine. Insoluble in water, it dissolves readily in alcohol and chloroform. It is claimed for this preparation that while it possesses all the anti-malarial properties of quinine, in addition to its absence of taste, it is less likely to produce toxic symptoms, although its protozoa-destroying action is twice that of quinine. It is said to exert a favourable influence upon pertussis. The dose is $7\frac{1}{2}$ grains. It is manufactured by Messrs. Bayer & Co., Ltd. 20, Booth Street, Manchester.

Asepturin.—This name is given by Messrs. R. Sumner & Co. to the salt produced by the action of ammonia on formic aldehyde (hexamethylenetetramine). We forgive them for not asking us to call it by its chemical name! The value of this salt has been widely proved as an antiseptic for the bladder and urethra; it gives excellent results in cystitis and gonorrhœa. Messrs. Sumner & Co. sell it in powder, in gelatin coated pills, and effervescing tablets. The latter makes an excellent way of administering it, as it is best taken with a large quantity of water. Fifty of these tablets are sold in a bottle for 1s., so that it ceases to be an expensive medicine, and it has a wide field of usefulness.

Aspirin Effervescing Granules.—Messrs. Blake, Sandford & Blake, of 49, Dover Street, Piccadilly, W., have succeeded in producing a granular effervescing preparation which contains 8 grains of aspirin (Bayer) to 100 grains, or a heaped tea-spoonful. The solution of the preparation forms a citrate of soda, which renders the aspirin soluble, so that a smaller dose than usual becomes effective. We regard this as a distinct improvement in pharmacy, and it provides for an otherwise rather insoluble substance being given not only in a soluble form, but also in one which is both palatable and effective. We think there will be an extensive demand for this preparation.

Boro-Benzoatis (Liquor).—This excellent preparation meets the indications for a mouth-wash or gargle. It contains eucalyptus, thymol, etc., in addition to borax and benzoate of soda. It is very pleasant to the palate, and removes the odour of tobacco. Messrs. Ferris & Co., of Bristol, are the manufacturers.

Bromocoll.—This is the result of an effort to find a substitute for bromide of potassium. It occurs as a light, yellow, odourless and tasteless powder, which is claimed to be insoluble in the stomach and freely so in the intestine. It is a combination of tannin and gelatin with 20 per cent of organically fixed bromine. The reports of its use are favourable, and it does not appear to produce acne or constipation. Messrs. Chas. Zimmermann & Co., of 9 and 10, St. Mary-at-Hill, E.C. are the London agents.

Chloroform Anschütz.—This has resulted from experiments with a view to getting rid of the impurities commonly found in commercial chloroform, and which are amongst its chief sources of danger. It is prepared as follows: when salicylide is combined with chloroform it forms a crystalline salt, in which chloroform plays a similar part to water in Glauber's salt. Thus by simple distillation chloroform is set free, and as the process liberates no other element, the chloroform is obtained chemically pure. The clinical results have been most satisfactory. The nausea, vomiting and other symptoms commonly

associated with the process of narcosis rarely occurred, and Prof. Witzel, of Bonn, considers that the dangers of chloroform narcosis are due in a large measure to impurities rather than to the agent itself. Messrs. Chas. Zimmermann & Co., 9 and 10, St. Mary-at-Hill, E.C. are the London agents.

Chocolate Coated Pills.—The chocolate coated tablet has come to stay, and it has occurred to Messrs. R. Sumner & Co. to use the same coating for pills. It masks all odour or taste of the drug, and is about as quickly soluble a coating as a pill could have. It keeps the pill mass in good condition, and we think it a distinct improvement.

Colchicine c. Salicylas Pills.—This pill relieves the pain of gout and rheumatism, and contains colchicine salicylas gr. $\frac{1}{16}$, sodii salicylas gr. 5, codeia sulphas gr. $\frac{1}{16}$. It has been put up by Messrs. R. Sumner and Co., of Liverpool, with a gelatin coating of a delicate colour, which gives a very attractive appearance.

Ectodyne c. Heroin.—This antipyretic and analgesic is now put up combined with Heroin, and has proved valuable in relieving bronchial and phthisical symptoms. R. Sumner & Co. are the makers.

Glycerinum Heroin Co.—This is one of the best preparations of heroin, and meets the general requirements for its employment. It is colourless and admits of ready combination with other remedies. It is made by Messrs. Ferris & Co., of Bristol.

Gonosan.—This is prepared by extracting from the root of piper methysticum (kawa-kawa) its essential resins, and dissolving them in pure sandal wood oil. It appears as an oily translucent substance, of a greenish colour, with a very strong aromatic smell. It is consequently best given in capsules, and these are supplied by Messrs. Thos. Christy & Co., 9, Old Swan Lane, E.C. When given in cases of gonorrhœa these capsules check the ardor urinæ and the tendency to chordee; their action is somewhat diuretic, and the discharge quickly changes from its yellow-green colour to white, and usually disappears within ten days. Injections are used locally and a rigid diet insisted upon, and 8 to 10 capsules (each containing 5 minims gonosan) are given during the day. The treatment deserves careful trial, for its success is intelligible.

Helmitol.—This salt when decomposed yields formaldehyde, which acts as a disinfectant, and restores the acid reaction of the urine. Up to the present it has found its chief field of usefulness in cases of cystitis and gonorrhœa, in which it gives excellent results. It is given in doses of 16 grains thrice daily. It is soluble in 7 per cent of water, but almost insoluble in spirit. Messrs. Bayer Co., Ltd., 20, Booth Street, Manchester, are the manufacturers.

Hetraline.—This is a new derivative of hexamethylenetetramine, which is claimed to possess similar therapeutic qualities as urotropin and helmitol, and to excel them in some respects. It is soluble 1-4 hot water, 1-14 cold water, and is quite stable. It has yielded excellent results in cystitis due to gonorrhœa. Messrs. Chas. Zimmermann and Co., 9 and 10, St. Mary-at-Hill, E.C. are the agents for this preparation, which they put up in tablets each containing $7\frac{1}{2}$ grains which is the ordinary dose.

Iodinated Wine (Vin. Nourry).—This is a very interesting preparation, possessing the pleasant taste of Malaga wine and yet containing a sufficient amount of iodine to produce all its therapeutic results. It was first used in France, but has steadily grown in reputation on account of the excellent results following its use. It has been employed for children as a substitute for cod-liver oil, and also for sclerosis and syphilis. It does not appear to cause any gastric disturbance and its pleasant taste makes it readily taken by patients. It is already in use at many of the large hospitals. Messrs. F. Comar & Son, 64, Holborn Viaduct, E.C. are the British agents. A syrup prepared in a similar way is also sold by the same firm for those who object to wine.

Iron-Milk.—This name is given to a preparation of the pyrophosphide of iron suspended in water, with glycerin, spirit and aromatics. It contains no milk, but has the appearance of it, and this to our minds is a good reason for *not* giving it the title it has received. It is very palatable, and does not blacken the teeth nor cause constipation, being non-astringent. Each tablespoonful contains the equivalent of $1\frac{1}{2}$ grains of pure metallic iron. It is produced by the British Iron-Milk Syndicate, Ltd., 115 and 116, Strand, W.C.

Lecithol.—This is a lecithin obtained from the yolks of hen's eggs, and has the taste and odour peculiar to eggs. It represents 4 per cent of pure phosphorus in a fatty base. Insoluble in water, it dissolves in alcohol, chloroform, and oil. It is recommended for use in all cases where phosphorus is indicated, the organic form in which the element appears being naturally of greater therapeutic value than the ordinary medicinal preparations. It is sold in powder and in "perles" as well as combined with chocolate and milk. The perles cost 4s. 6d. per 100. Messrs. Thos. Christy & Co., of 10 and 12, Old Swan Lane, E.C. are the agents.

Lofotol.—To compare cod-liver oil with champagne requires some stretch of imagination, but lofotol is nothing but a pure cod-liver oil with the sparkle of champagne, due to the presence in both of carbonic acid gas. This gas has a great affinity for oil, and gives that fillip to the palate which the unctuous dose so sorely needs. It is a happy idea, and the invalid appreciates it, but more than this, the gas aids assimilation and prevents it from becoming oxidised, and forming those rank fatty acids to which the nauseous taste of cod-liver oil is largely due. Messrs. Southall Bros. & Barclay, of Birmingham, enjoy the merit of having introduced this preparation.

Maltine with Creosote.—This is one of the latest productions of the Maltine Manufacturing Co., 24 & 25, Hart Street, E.C. Each fluid ounce contains four minims of pure creosote. It forms a perfect emulsion with the malt, and the gastric disturbance which so frequently occurs when the drug is administered in capsules is prevented. The preparation is not unpalatable, and should prove of great value in phthisis and chronic bronchitis.

Medicated Pastilles.—The following is a new pastille which is excellent in bronchial affections. Terpin Hydrat. gr. $\frac{1}{4}$, heroin hydrochlor. gr. $\frac{1}{12}$, pine oil (pumilio) 1 minim. This should also meet the irritative cough of consumptive patients. They are made by Messrs. R. Sumner & Co., and cost 3s. per lb.

Mesotan.—This is the methoxymethylester of salicylic acid, and may be regarded as gaultheria oil free from disagreeable smell and improved in therapeutic power. It is not without odour, but this is not unpleasant. Soluble in alcohol, ether and oil, it is practically insoluble in water. It is applied locally to rheumatic joints with olive oil, without friction. It is said to produce rapid relief of pain, especially in muscular rheumatism. We believe that this product of Messrs. Bayer & Co. will find a very extensive field of usefulness.

Peruol.—This is a 25 per cent solution in castor oil of benzoic-acid-benzylester, which is the active therapeutic constituent of balsam of Peru. It has been largely used in Germany in the treatment of scabies, not only on account of its efficiency, but because it is free from smell and does not stain the linen. It has been used also for pruritus. Messrs. Chas. Zimmermann & Co., 9 & 10, St. Mary-at-Hill, E.C. are the London agents.

Phenazone.—This remedy has been used for pertussis with some success, and Messrs. C. J. Hewlett & Son, 40–42, Charlotte Street, E.C. have put up a very excellent preparation well suited for children, under the name *mist. phenazoni co.* It contains phenazone 2 grains, with glycerin, tolu and syrup cocci in each fluid drachm.

Phenol Capsules Compound.—These contain equal parts of phenol, menthol, eucalyptus and gaultheria. They are excellent to relieve flatulent dyspepsia, and act as an intestinal disinfectant. They are put up by Messrs. R. Sumner & Co., Liverpool.

Resorbin.—“This is an ointment vehicle made by emulsifying almond oil and water by means of yellow wax and gelatin, to which is added some lanolin.” Owing to the amount of water it contains, its effect is cooling to the skin, most ointment bases being the reverse of this. For this reason it is not suitable for weeping surfaces, but is very valuable when crusts and scales or a dry skin have to be treated. It is also used to produce mercury resorbin, which contains $33\frac{1}{2}$ and 50 per cent of mercury. This is an especially valuable form of mercury for inunction. The manufacturers supply it in tubes having a graduated scale marked in thirty divisions, each representing 15 grains of the ointment, so that the dose of each inunction can be measured without difficulty. This arrangement is most convenient. Messrs. Chas. Zimmerman & Co., of 9 and 10, St. Mary-at-Hill, E.C.

Styptol.—This is a neutral cotarnin phthalate, and appears as a yellow powder very soluble in water. It has been used internally in doses of $\frac{3}{4}$ grain (.05 gram.) to control uterine hæmorrhage, with great success. It is put up in tablets each containing one dose, and these dissolve in tepid water when well stirred. A vial of these tablets is a decided acquisition for the emergency or obstetric bag. Styptol may be used also as an external application to bleeding wounds as a dusting powder. Mr. B. Kuhn, 16, Rood Lane, E.C., is the agent.

Syrups.—Messrs. Ferris & Co. have sent us samples of the following syrups, which are very useful preparations:—

Syr. Carbohc Co.—The active ingredients of this syrup are carbohc acid, ipecac., and belladonna. It is regarded as a useful combination in cases of pertussis and other forms of spasmodic cough in children.

Syr. Glycerophosph. Co.—The glycerophosphates have an increasing reputation with the practitioner, and this preparation enables them to be administered in a very efficient and agreeable form. It contains also pepsin and diastase. The price is 3s. 6d. the 1 lb. bottle. It is, therefore, a less expensive preparation than some.

Syr. Pruni. Virg. Expectorans.—An excellent combination of ammon. carb., ipecacuanha, squills, and senega, in conjunction with syr. pruni. virg.

Supra-renal.—Suppositories containing 3 minims of the solution have given excellent results in the treatment of hæmorrhoids and bleeding from the rectum. They also relieve irritation. They are also made combined with cocaine and hamamelidin. Compound supra-renal snuff is another method of using this valuable remedy. It is not only useful in cases of hæmorrhage from the nose, but also in hay fever, asthma, and catarrh. Messrs. R. Sumner & Co.

Ung. Sedresol.—This is an antiseptic ointment of general utility where a simple ointment is required. To save trouble in dispensing, Messrs. Ferris & Co. put it up in small jars of various sizes with blank label ready for directions. This is a great advantage to those who dispense their own medicines, as it saves time and trouble, and the result is elegant.

Unna's Pastes.—The treatment by a gelatin paste spread over the site of a skin eruption, introduced by Prof. Unna, has been used for some years in this country, and with good results. Messrs. C. J. Hewlett and Son, 40-42, Charlotte Street, E.C., have facilitated the application of this treatment by producing a series of discs containing boric acid, carbolic acid, ichthyol, resorcin, and zinc oxide in various combinations. These have to be melted before application, and Messrs. Hewlett & Sons supply a hot-water bath (*Fig. 71*) with spirit lamp for this purpose. The gelatin dressings only require to be removed once a week, and keep the eruption free from air, dust, and friction, and thus mechanically assist the cure quite apart from the medicament employed.

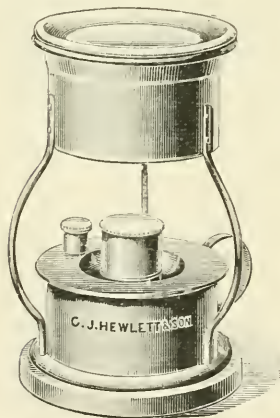


Fig. 71.

Uritone.—This remedy, which is derived from formaldehyde and ammonia, readily gives off the former after administration, and has proved most valuable as an antiseptic for the kidneys and bladder. It is freely soluble in water, but it appears preferable to give it in doses of 5 to 15 grains in capsules, and follow each dose with a glass of water, as otherwise it tends to irritate the stomach. Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C., put it up in 5-grain capsules, which are most convenient for dispensing.

Vaginal Douche Tablets.—A tablet containing 30 grains each of alum and zinc and $2\frac{1}{2}$ grains of potassium permanganate has been put up by Messrs. R. Sumner & Co. The patient is directed to dissolve one of these in a pint of warm water to make a lotion for vaginal douche. Tubes of twelve tablets cost 5s. 6d. per dozen. This is an excellent method of prescribing medicaments for vaginal douches.

DIETETIC ARTICLES.

The Barium Waters of Wales.—The Llangammarch Springs meet a class of case which no other mineral spa can pretend to affect. With $6\frac{1}{4}$ grains of chloride of barium to the gallon, it exercises a gentle but permanent therapeutic effect upon many functional disorders of the heart, and appears to us especially suited for those cases of children who have enlarged tonsils as a part of a general constitutional state, a symptom of which is an irritability of the heart and vaso-motor nerves. We also think that arterio-sclerosis would be greatly benefited by the persistent use of this water. We are glad to find that barium water can now be obtained still in bottles, or aerated in syphons, so that it can be used regularly over long periods, which we have always believed essential to obtaining its full effect. Being of a pleasant taste, it may be used as a beverage with meals, and we shall very much like our readers to try it in the class of cases we have indicated. It can be obtained on application to the Pump House, Llangammarch Wells, Breconshire.

Casumen.—We have used this preparation extensively during the past year, and are well satisfied with the results. It contains 93 per cent of proteid, and may therefore be regarded as proteid, just as we recognize arrowroot or cornflour as starch. The former contains only 1 per cent of proteid, and so when we mix the two together we can increase the food value of both enormously. The Casumen Company manufacture a casumen-arrowroot which we regard as an ideal invalid food; but what we like about casumen is the ease with which it can be mixed with any other farinaceous food agreeable to the patient, and the fact that it does not upset the digestion, like many other articles which have a similar aim, and which are very desirable on theoretical grounds, but break down in practice. The clinical test is the only one reliable in the case of determining the food value, and we have applied this very carefully in a large number of cases, with the conclusion that casumen has a distinct and permanent place as an addition to the ordinary food of the invalid. It is made by Prideaux's Pure Casein and Life Food Co., Ltd., Motcombe, Dorset.

Cider.—The value of cider as a beverage, especially in cases of gout and rheumatism, is becoming more recognized as a demand for pure cider is met by the manufacturer. We none of us can recommend cider as a beverage, because we have no guarantee of the nature of the concoction sold under this name; it may be very pleasant to the palate, but none the less undesirable to those who are disposed to the accumulation of uric acid. The practitioner is obliged to study the

products of those firms who undertake the supply of a pure cider free from all sophistication. The examination we have made of the products of Messrs. W. Gaymer & Son, the Norfolk Cider Brewers, of Attleborough, have proved very satisfactory, and we have no hesitation in recommending their cider as a beverage for the most gouty of our patients. They supply it in various brands, "natural," "dry," or "very dry," so that it is adapted to all palates, and either in cask or bottle.

Cigars (Non-Nicotinic).—Dr. R. Kissling has proved that the taste of the cigar does not depend upon the nicotine it contains. He has invented a process by which 97·5 per cent of nicotine is extracted from the raw tobacco, and the cigars produced from tobacco so treated leave nothing to be desired as regards flavour and aroma. If Dr. Kissling's claims can be substantiated, it should create a revolution in the whole manufacture of tobacco, for it is obvious that no smoker would wish to saturate himself with nicotine if he could enjoy all the pleasures of smoking with impunity. Dr. Kissling's agency, 15, Fore Street, E.C., supply one sample of five qualities for 1s. 6d. post free. The prices of the cigars, ranging from 20s. to 32s. per 100, struck us as being moderate, as they proved of excellent flavour. We advise our readers to sample them themselves.

Cocoa and Chocolate.—*Messrs. Cadbury Bros., Ltd.*, have submitted samples of their cocoa essence, Mexican chocolate, and milk chocolate, and we find that the standard of purity in the manufacture has been well maintained. These preparations are all too well known and appreciated to need description.

Messrs. J. S. Fry & Sons, Ltd., send us a sample of their cocoa and milk, which is most convenient in the sick room, as it is already sweetened, and needs only the addition of hot water to make a delicious cup of cocoa.

Jellies and Custards.—When in doubt what to give the invalid for a change, or as an addition to ordinary food, it is well to remember the dainty jellies and custards which can be bought in packets and readily prepared as required. The jellies have a number of different flavourings, so that the palate is tempted. *Messrs. Chivers & Sons*, of Histon, Cambridge, make a speciality of these preparations, and most grocers stock them. The firm can be relied upon to produce a pure article, and these packet jellies and custards can be recommended with every confidence.

Pulse Food.—By this is meant peas, beans, and lentils, which contain so large an amount of proteid matter that they have been termed the "beef" of the vegetable kingdom. But they are apt to disagree with invalids, and cause flatulence and trouble in digestion. The Digestive Food Co., of Paisley, have made it their special object to put this form of food before the public in such a way as to retain all its great power as a source of energy, and yet be easily assimilated. The lentil flour and pea flour, of which they send us samples, have so far given us such satisfaction, that we propose to make a more extended trial of these preparations and report further on the matter. They issue a book of receipts in order to popularise the use of these foods for invalids, and many of these are a refreshing change from the monotonous routine of invalid dietary. We think our readers might make a trial of these foods with advantage.

Triscuit.—We usually associate the farinaceous foods given to invalids with something of the consistency of pap, and which can be swallowed as fast as it is taken. When we remember how important a part the saliva plays in the digestion of such foods, we can see the advantage of having one made hard and crisp so that it requires mastication. Triscuit is pure wheat, which by a series of mechanical operations, during which it is thrice cooked, is produced in a very palatable and easily digestible form resembling a biscuit, and which proves sustaining because it requires so little energy to set free the energy which it contains. It is one of the products of the Shredded Wheat Company, 6 and 8, Eastcheap, E.C., who describe in detail the whole process of manufacture. It is a pure unsophisticated article of food which has made a reputation on its own merits. Triscuit can be eaten as it is, or cooked in a number of ways, of which the Company give particulars.

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Springfield House Asylum; 1 hour from London. Better class patients only received. Separate bedrooms. Terms from 3 guineas. Res. Med. Supt., D. Bower, M.D. Access—Bedford, $1\frac{1}{2}$ mile. Mid. and L. & N. W. Rly. Telephone No. 17. *See also p. 929.*

Belfast.—*Belfast District Lunatic Asylum.* Res. Med. Supt., Wm. Graham, M.D. Access—Belfast.

Beverley.—*East Riding County Asylum.* Res. Med. Supt., M. D. Macleod, M.B. Access—Beverley station, 2 miles.

Birmingham.—*Birm. City Asylum,* Winsor Green. Res. Med. Supt., E. B. Whitcombe. Access—Winsor Green, $\frac{1}{2}$ mile, Soho, $\frac{1}{4}$ mile.

Bodmin.—*Cornwall County Asylum.* Res. Med. Supt., Dr. Hy. A. Layton.

- Box (Wilts).**—*Kingsdown House*, 5 miles from Bath. Res. Med. Supt., Dr. H. C. MacBryan. Access—Box. See also *f.* 927.
- Brentwood.**—*Essex County Asylum*. Res. Med. Supt., Dr. G. Amsden. Access—Brentwood 1 mile.
- Bridgend.**—*Glamorgan County Asylum*. Res. Med. Supt., H. T. Pringle, M.D. Access—Bridgend, $1\frac{1}{2}$ miles.
- Bristol.**—*Brislington House*. Res. Med. Supt., Dr. W. B. Morton. Asst. Med. Off., E. Laval. Access—Brislington, $1\frac{1}{3}$ miles.
City and County Asylum, Fishponds. Res. Med. Supt., Harry A. Benham, M.D. Clerk, Arthur Orme. Access—Fishponds, 1 mile.
Northwoods House, Winterbourne, 7 miles from Bristol. Res. Med. Props., Reginald Eager, M.D., & Mr. W. Eager, L.R.C.P., M.R.C.S. Acc.—Cab from Bristol, or from Fishponds, Winterbourne, or Patchway stations.
 See also *f.* 928.
- Bromsgrove.**—*Birmingham City Asylum*, Rubery Hill, near Birmingham. Res. Med. Supt., A. C. Suffern, M.D. Access—Rubery station.
- Burgess Hill (Sussex).**—*St. George's Retreat*, Ditchling. Med. Off., Dr. John A. Cones. Access—Burgess Hill station.
- Buxton.**—*Wye House*. Res. Phys., F. K. Dickson, F.R.C.P., and T. G. Dickson, L.R.C.P. Access—Buxton. See also *f.* 923.
- Cambridge.**—*County Asylum*, Fulbourn. Res. Med. Supt., E. C. Rogers, M.R.C.S. Access—Cambridge, 3 miles.
- Carlisle.**—*County Asylum*. Res. Med. Supt., W. F. Farquharson, M.D. Access—Carlisle, 3 miles.
Cumberland House (for gentlemen), *Westmorland House* (for ladies), both in connection with the County Asylum. Apply as above.
- Carlow.**—*District Asylum*. Res. Med. Supt., Dr. J. J. Fitzgerald. Access—Carlow, $\frac{1}{4}$ mile.
- Carmarthen.**—*Joint Counties Asylum*. Res. Med. Supt., Edwin Goodall, M.D. Access—Carmarthen, 2 miles.
- Castlebar (Co. Mayo).**—*District Asylum*. Res. Med. Supt., Dr. G. W. Hatchell. Access—Castlebar, 1 m.
- Chartham (near Canterbury).**—*Kent County Asylum*. Res. Med. Supt., G. C. Fitzgerald, M.D. Access—Chartham station, 1 mile.
- Cheadle.**—*Manchester Royal Lunatic Hospital*. Res. Med. Supt., W. Scowcroft, L.R.C.P., M.R.C.S. Access—Cheadle, 2 miles.
- Chester.**—*Cheshire County Asylum*. Res. Med. Supt., A. Lawrence, M.D. Station, $1\frac{1}{2}$ miles.
- Chichester.**—*West Sussex County Asylum*. Res. Med. Supt., Dr. H. A. Kidd. Access—Chichester, $1\frac{1}{2}$ miles.
- Church Stretton.**—*Stretton House*, Shropshire (for gentlemen). Res. Med. Officer, Horatio Barnett, M.B. Access—Church Stretton station, 1 mile.
The Grove House (for ladies). Res. Prop. Mrs. McLintock. Res. Med. Supt., Dr. McLintock.
- Clonmel.**—*District Asylum*. Res. Med. Supt., Dr. Bagenal C. Harvey. Access—Clonmel, 1 mile.
- Colchester.**—*Eastern Counties Imbecile Asylum*. Res. Supt. and Sec., John J. C. Turner. Access—Colchester.
- Cork.**—*District Asylum*. Accommodation for 1,600 patients. Res. Med. Supt., Oscar Woods, M.D. Access—Cork, 2 miles.
- Cupar (Fifeshire).**—*Fife and Kinross District Asylum*. Res. Med. Supt., A. R. Turnbull, M.B. Access—Springfield station.
- Darlington (Durham).**—*Dinsdale Park*. Res. Med. Supt., H. W. Kershaw, M.R.C.S. Access—Darlington, 5 miles; Dinsdale, 1 mile.

Dartford.—*City of London Asylum*, near Dartford. Res. Med. Supt., Dr. E. W. White. Access—S.E. Rly., Dartford, $1\frac{1}{2}$ miles. Private patients received at 21/- per week.

Denbigh (N. Wales).—*North Wales Counties Asylum*. Med. Supt., Dr. Llewelyn F. Cox. Access—Denbigh, 1 mile.

Derby.—*Borough Asylum, Rowditch*. Res. Med. Supt., Dr. Macphail. Access—G.N. station, 1 mile; Mid., 2 miles. See also p. 930.

County Asylum, Mickleover. Res. Med. Supt., R. Legge, M.D. Access—Derby (Mid. Rly.) 5 miles, Mickleover (G.N. Rly.) 2 miles.

Devizes.—*Wilts County Asylum*. Res. Med. Supt., J. I. Bowes, M.R.C.S. Acc.—Devizes, 1 mile.

Dorchester.—*Dorset County Asylum*. Med. Supt., P. W. MacDonald, M.D. Acc.—Dorchester, 3 miles.

Downpatrick—*District Asylum* (for 800 patients). Res. Med. Supt., M. J. Nolan, L.R.C.P.I. & L.M. Access—Downpatrick, 1 mile.

Drumcondra (Co. Dublin).—*Hartfield Retreat*. Med. Prop., Dr. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

Dublin.—*Bloomfield*, Morehampton road. Med. Officer, H. T. Bewley, M.D. Access—Dublin, 1 mile.

Farnham House and Maryville, Finglas (for 56 patients, both sexes). Prop. and Res. Med. Supt., W. R. Dawson, M.D. Access—Cab from Dublin, 3 miles.

Consulting Rooms, 41, Upper Fitz-William Street, Dublin.

Highfield (for ladies), Drumcondra. *Hamstead* (for gentlemen), Glasnevin. Res. Med. Supt., Hy. M. Eustace, B.A., M.D. Access—By rail, Dublin. See also p. 938.

House of St. John of God, Stillorgan. Resid. Phys., Dr. P. O'Connell. Access—Stillorgan station, $\frac{1}{2}$ mile. Dublin, 5 miles.

Richmond District Asylum. Res. Med. Supt., Dr. C. Norman.

St. Patrick's Hospital, James Street. Res. Med. Supt., Dr. R. R. Leeper.

St. Vincetn's Asylum, Fairview, Vis. Med. Supts., Sir Francis R. Cruise, D.L., M.D., and John Murphy, F.R.C.P.I. Apply to the Superioress.

Stewart Institution, Palmerston. Res. Med. Supt., F. E. Rainsford, M.D. Access—Kingsbridge station, $2\frac{1}{2}$ miles.

Verville, Clontarf, near Dublin. Med. Prop., Dr. Lynch. Vis. Phys., Dr. M. B. Savage. Access—Dublin.

Woodbine Lodge, Rathfarnham, 6 miles (ladies). Prop., Mrs. Bishop. Med. Supt., Dr. A. Croly. Access—Rathfarnham tram, 2 miles.

Dudley (Stafford).—*Ashwood House*, Kingswinford. Props., Drs. Peacock and Pietersen. Res. Med. Supt., Dr. Pietersen. Access—Stourbridge Junct. $3\frac{1}{2}$ miles, Dudley sta., 4 miles; Wolverhampton, 7 miles. See also p. 934.

Dumfries.—*Crichton Royal Institution*. Med. Supt., J. Rutherford, M.D. Access—Dumfries, 1 mile.

Dundee.—*Royal Asylum and District Asylum*, Liff. Res. Med. Supt., James Rorie, M.D. Access—Dundee, 3 miles; Liff, $1\frac{1}{2}$ miles.

Durham—*County Asylum*, Winter-ton. Res. Med. Supt., Dr. W. St. J. Skeen. M.B. Access—Sedgefield station, 3 miles, by 'bus.

Middleton Hall, Middleton St. George, Co. Durham. Res. Licen., P. C. Smith, L.R.C.P. & S., Ed., L.F.P.S.G. Access, Dinsdale station, 1 mile.

See also p. 924.

Earlswood.—*Training Home for the Feeble-minded and Imbecile*. Res. Med. Supt., Dr. Chas. Caldecott. Males 400, females 200. Sec., 36, King William st., E.C. Access—Earlswood stat., Red Hill Junc., $1\frac{1}{2}$ miles. See also p. xl.

Edinburgh. — *Maidsbank House*, Polton, Midlothian. Res. Med. Supt., G. R. Wilson, M.D. Access—Polton sta., N.B.R., 5 minutes' walk.

Midlothian and Peebles District Asylum. Patients 330. Res. Med. Supt., R. B. Mitchell, M.D. Access—Rosslynlee sta., 1 mile.

Royal Edinburgh Asylum, Morningside. Res. Phys. Supt., T. S. Clouston, M.D. Access—Edinburgh, 1½ miles.

Saughton Hall. Res. Med. Supt. & Prop., Sir J. Batty Tuke, M.D. Access—Princes Street station, 20 minutes.

Elgin.—*District Asylum*. Res. Supt., Alexander Hendry. Vis. Med. Off., J. W. N. Mackay, M.D. Access—Elgin, ¼ mile.

Ennis. — *District Asylum*. Res. Med. Supt., Dr. F. O'Mara. Access—Ennis station, 1¼ miles.

Enniscorthy (Co. Wexford).—*District Lunatic Asylum*. Res. Med. Supt., Thos. Drapes, M.B. Access—Enniscorthy, 1 mile.

Epsom (Surrey).—*Church st.* (for 14 ladies). Res. Med. Supt., Dr. W. Clement Daniel. Access—L. & S.W.R., and L.B.S.C.R., 5 minutes.

Exeter.—*City Asylum*, Heavitree. Res. Med. Supt., R. L. Rutherford, M.D. Acc.—Exeter, 4 miles
Court Hall, Kenton. Props., The Misses Mules. Vis. Phy. Dr. Lovely. Access—Starcross, 1 mile.

Devon County Asylum, Exminster. Med. Supt., Dr. Arthur N. Davis. Access—Exminster, 1¼ miles; Exeter, 4 miles.

Wonford House (Hospital for the Insane). Res. Med. Supt., P. Maury Deas, M.B., M.S. Lond. Access—Exeter station (Queen st.) 1½ miles; (St. David's), 2 miles.

See also p. 933.

Fairford (Gloucestershire).—*Rectreat*. Res. Med. Prop., Dr. A. C. King-Turner. Access—Fairford.

See also p. 935.

Glasgow.—*District Asylum*, Woodilee. Med. Supt., Hamilton C. Marr, M.D. Access—Lenzie station, 1 mile; Glasgow, 8 miles.

District Asylum and Hospital for Mental Diseases, Gartloch. Res. Med. Supt., W. A. Parker, M.B.

Govan District Asylum, Hawkhead. Res. Med. Supt., Dr. W. R. Watson. Access—Crookston station.

Kirklands Asylum, Bothwell. Res. Med. Supt., James H. Skeen, M.B. Access—Bothwell & Fallside stations, ½ mile; Glasgow, 9 miles.

Lanark County Asylum. Med. Supt., Dr. N. T. Kerr. Access—Hartwood, 5 minutes.

Royal Asylum, Gartnavel. Res. Phys. Supt., Landel R. Oswald, M.B. Private patients only.

Smithston Asylum, Greenock. Med. Off., J. Wallace, M.D. Access—Greenock, about 1½ miles.

Gloucester. — *Barnwood House*. Res. Med. Supt., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles. *See also p. 934.*

Gloucester County Asylums, Wotton & Barnwood, Gloucester. Res. Med. Supt., F. Hurst Craddock, M.A. Oxon., M.R.C.S. Access—Gloucester station, 1 mile.

Great Yarmouth. — *Royal Naval Hospital*. Apply Fleet Surgeon in charge. Access—Great Yarmouth station, 1 mile. For Naval patients only, admitted by Admiralty order.

Guernsey.—*St. Peter Port Asylum*. Med. Supt., E. V. Gibson, M.D.

Haddington.—*District Asylum*, 17 miles from Edinburgh. Med. Supt., J. Bruce-Ronaldson, M.D. Access—Haddington station, 10 minutes.

Hatton (near Warwick).—*County Asylum*. Res. Med. Supt., A. Miller, M.B. Access—Hatton station, 2 miles; Warwick station, 3 miles.

- Hayward's Heath.**—*East Sussex County Asylum*. Res. Med. Supt., Edward B. C. Walker, M.D. Access—Hayward's Heath sta., $1\frac{1}{2}$ miles.
- Hellingly.**—*East Sussex County Asylum*. Med. Supt., F. R. P. Taylor, M.D. *See also* p. 924.
- Henley-in-Arden** (Warwickshire).—*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Henley-in-Arden, G.W.R., $\frac{1}{2}$ mile.
- Hereford.**—*County and City Asylum*. Res. Med. Supt., C. S. Morrison, L.R.C.P., Ed. Access—Hereford, 3 miles.
- Hitchin (Herts)**, near. — *Three Counties Asylum*. Res. Med. Supt. S. E. de Lisle, L.R.C.P.I. Access—Three Counties station, 1 mile.
- Hull.**—*City Asylum*. Res. Med. Supt., J. Merson, M.D. Access—Willerby station, 1 mile.
- Inverness.**—*District Asylum*. Med. Sup., John Keay, M.D. Asst. Med. Off., Dr. J. G. Cullum. Access—Inverness, $2\frac{1}{2}$ miles.
- Ipswich.**—*Borough Asylum*. Med. Supt., Dr. E. L. Rowe. Access—Ipswich, 2 miles.
- Isle of Man.**—*Lunatic Asylum*, Union Mills. Med. Supt., W. Richardson, M.D. Access—Douglas, 3 miles.
- Isle of Wight.**—*The County Asylum*, Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater, $\frac{3}{4}$ mile. Newport, $2\frac{1}{2}$ miles. Private Patients received.
- Isleworth (Middlesex).**—*Wyke House*. Res. Prop., Dr. F. Murchison. Access—Isleworth, Brentford, Osterley station, 1 mile.
- Ivybridge.**—*Plymouth Borough Asylum*. Res. Med. Supt., W. H. Bowes, M.D. Access—Wrangaton, G.W.R., $1\frac{1}{2}$ miles; Ivybridge, 3 miles.
- Jersey.**—*The Grove*. Res. Med. Prop., F. N. Gaudin, M.R.C.S. $2\frac{1}{2}$ miles from St. Heliers, 2 from St. Aubin's.
Jersey Asylum. Med. Supt., Julius Labey, M.R.C.S., &c.
- Kilkenny.**—*District Asylum*. Res. Med. Sup., G. F. West, L.R.C.P. Access—Kilkenny, $\frac{1}{2}$ mile.
- Killarney.**—*District Asylum*. Res. Med. Supt., Dr. L. T. Griffin, Asst. Med. Off., E. W. Griffin, M.D. Access—Killarney, $\frac{1}{2}$ mile.
- Kirkby Lonsdale.**—*Greta Bank*. Res. Licensee, Mrs. Taylor. Access—Bentham (M.R.) 2 miles.
- Kirkintilloch** (near Glasgow).—*Westermains Private Asylum*. For ladies; quiet cases only received. Apply to Mr. Lawrie, Res. Proprietor. *See also* p. 931
- Knowle** (near Fareham).—*County Asylum*. Med. Supt., T. B. Worthington, M.D.
- Lancaster.**—*County Asylum*. Res. Med. Supt., David M. Cassidy, M.D., D.Sc. Access—Lancaster, L. & N. W., and Midland stations, each $1\frac{1}{4}$ mile.
- Leeds** (Menston, near).—*West Riding Asylum*. Res. Med. Supt., Dr. McDowall. Access—Menston, 1 mile.
- Leek** (Stafford).—*County Asylum*, Cheddleton. Med. Supt., W. F. Menzies, M.D. Access—Wall Grange station, 1 mile.
- Leicester.**—*Borough Asylum*. Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.
Leicestershire and Rutland Asylum. Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Leicester Town, 1 mile.
- Letterkenny and Londonderry.**—*Donegal District Asylum*. Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access—Letterkenny and Lough Swilley Rly. 1 mile.
- Lichfield.**—*County Lunatic Asylum*, Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access—Lichfield City, $3\frac{1}{2}$ miles; Trent Valley, $4\frac{1}{2}$ miles; Hammerwich, $1\frac{1}{2}$ mile.
- Limerick.**—*District Asylum*. Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, $\frac{1}{2}$ mile.

Lincoln.—*County Asylum*, Bracebridge. Med. Supt., Dr. G. Parsons Torney. Access—2½ miles from station.

The Lawn. Res. Med. Supt., Arthur P. Russell, M.B. Access—Lincoln, 1 mile. *See also p. 933.*

Liverpool.—*Shaftesbury House*. Near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D., M.R.C.P., Lond. Access—Formby station, ¼ mile distant. *See also p. 921.*

Tue Brook Villa, 3 miles from Liverpool. Res. Med. Supt., Dr. J. A. Cooke. (For 52 males and females). Access—Tue Brook stat. or Green Lane car.

London.—*Bethlem Royal Hospital*, St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E. *See also p. 928.*

Bethnal House, Cambridge Rd., N.E. Res. Med. Supt., J. K. Will, M.D. Access—Bethnal Green station.

Brooke House, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. J. O. Adams. Access—Clapton.

Camberwell House, Peckham Road, S.E. Res. Med. Supt., Francis H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., Robt. Serjeant, M.R.C.S., and Henry C. E. Quin, L.R.C.S. *See also p. 932.*

Chiswick House, Chiswick. Lics., Dr. T. S. Tuke. Res. C. M. Tuke. Access—Chiswick station, ½ mile; Turnham Green station, ¾ mile.

Clarence Lodge, Clapham Park, S.W. Lic., Miss F. Leech. Med. Off., Dr. G. F. Blandford. Access—Clapham Road and Clapham Common (electric), 15 minutes.

Featherstone Hall, Southall. Res. Med. Lic., Dr. W. H. Bailey. Access—Southall station, 5 mins.

Fenstanton, Christchurch Road, Streatham Hill. Res. Med. Supt., Dr. J. R. Hill. Access—Tulse Hill, 5 minutes, and Herne Hill, 15 minutes. *See also p. 933.*

Flower House, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.B. Access—C. and D. R. Beckenham Hill, 5 minutes.

Grove Hall, Bow (both sexes). Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow stations, ¼ mile.

Halliford House, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S., Access—Sunbury station, 1½ mile.

Hayes. Wood End House (ladies). Uxbridge, 3 miles, London 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Res. Med. Off., Dr. J. W. Higginson. Access—Hayes, 2 miles.

Hendon Grove Asylum (for ladies), Hendon. Med. Lic., F. W. Edridge-Green, M.D., F.R.C.S. Access—By M.R., Hendon stat., ½ mile, or 'Bus from Swiss cottage, St. John's Wood, N.W.

Hoxton House, London, N. Res. Med. Supt., Dr. J. F. Woods. Access—Shoreditch station, 2 minutes; Liverpool Street station, 10 minutes.

London County Asylum, Bantstead Downs, near Sutton, Surrey. Res. Med. Supt., D. J. Jones, M.D. Access—Belmont sta., ½ mile; Sutton station, 1½ mile.

London County Asylum, Bexley, Kent. Res. Med. Supt., T. E. K. Stansfield, M.B. Access—Bexley station, 1¼ miles.

London County Asylum, Cane Hill, Purley, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access—Coulston (S.E.R.), or Stoat's Nest (L.B. & S.C.R.), 10 minutes.

London County Asylum, Claybury, Woodford, Essex. Res. Med. Supt., Robert Jones, M.D. Access—Woodford, 1½ miles.

London County Asylum, Colney Hatch, N. Res. Med. Supt., W. J. Seward, M.B. Access—New Southgate, G.N.R.

London County Asylum, Hanwell, W. Res. Med. Supt., R. R. Alexander, M.D.

London County Asylum, Horton, near Epsom. Med. Supt., Dr. F. Bryan.

Middlesex County Asylum, Tooting, S. W. Med. Supt., H. G. Hill, M.R.C.S. Access—Wandsworth Common station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles, London, 13 miles. Med. Licensees, Dr. Stilwell, and Dr. R. H. Cole. Access—West Drayton, 2 miles.

Newlands House, Tooting Bec Road, S.W. (for gentlemen). Lic. Prop., A. H. Sutherland. Med. Supt., H. J. Hind. M.R.C.S. Access—Balham station, 1 mile, and tram. See also p. 931.

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr. Frank R. King. Access—Finsbury Park station, 1 mile. See also p. 935.

Otto House, 47, North End Rd., West Kensington (for ladies). Lic. Prop., A. H. Sutherland. Lady Supt., Mrs. Chapman. Access—West Kensington station, 1 mile. See also p. 931.

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye station, 10 minutes' walk. See also p. 933.

St Luke's Hospital, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. Convenient to all principal London stations.

See also p. 928.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access—Barnes station, 10 minutes.

Vine Cottage, Norwood Green, Middlesex. Res. Prop., George Snell, M.D. Ac.—Southall, 1 mile.

West Ham Boro' Asylum, Goodmayes, Ilford. Res. Med. Supt., Dr. D. Hunter. Access—Goodmayes, $\frac{3}{4}$ mile.

Londonderry. — *District Asylum*. Res. Med. Supt., Dr. Hetherington. Access—Londonderry, 1 mile.

Macclesfield. — *Parkside Asylum*. Res. Med. Supt., T. Steele Sheldon, M.B., Lond. Access—Macclesfield station, 1 mile.

Maidstone — *Kent County Asylum*. Res. Med. Supt., F. P. Davies, M.D. Access—Maidstone sta., $1\frac{1}{2}$ miles.

West Malling Place (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts). — *Fiddington House*. Prop., Major Reilly. Res. Med. Supt., Dr. J. Selfe Lush. Access—Lavington $1\frac{1}{2}$, Devizes 6 miles.

Maryborough (Queen's County). — *District Asylum*. Res. Med. Supt., Dr. J. H. Hatchell. Access—Maryborough, $\frac{1}{2}$ mile.

Melrose, N.B. — *Roxburgh District Asylum*. Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile.

Melton. — *Suffolk County Asylum*, near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, $1\frac{1}{4}$ mile; Woodbridge station, $2\frac{1}{4}$ miles.

Middlesboro'. — *County Boro Asylum*. Res. Med. Supt., Dr. G. S. Pope. Access—Middlesboro', 2 miles.

Monaghan (Ireland). — *District Asylum*. Res. Med. Supt., Dr. Edwd. Taylor. Acc.—Monaghan, $\frac{1}{4}$ mls.

Montrose, N.B. — *Montrose Royal Lunatic Asylum*. Phys. Supt., John G. Havelock, M.D. Access—Hillside, $\frac{1}{4}$ mile; Dubton, 1 mile.

Morpeth. — *Northumberland County Asylum*. Res. Med. Supt., Thos. W. McDowall, M.D. Access—Morpeth station, 1 mile, by 'Bus.

Mullingar. — *District Asylum*. Res. Med. Supt., Dr. A. D. Finegan. Access—Mullingar sta., 1 mile.

- Nelson (Lanc.).** — *Marsden Hall* (both sexes). Res. Prop., Mrs. Bennett. Med. Atten., Dr. A. P. Millar. Access—Nelson or Colne sta., $1\frac{1}{2}$ miles. *See also* p. 932.
- Newcastle-on-Tyne.** — *City Asylum*, Gosforth. Res. Med. Supt., James T. Callcott. M.D. Access—Newcastle, 4 miles.
- Newton-le-Willows (Lanc.)** — *Haydock Lodge Asylum*. Med. Prop., E. H. Beaman, M.R.C.S., Edin. Res. Med. Supt., Dr. C. T. Street. Access—Newton-le-Willows station, 2 miles.
- Northampton.** — *Berrywood Asylum*. Res. Med. Supt., W. Harding, M.D. Access—Castle station, $2\frac{1}{2}$ miles; Midland stat., 3 miles. *St. Andrew's Hospital*. Med. Sup., J. Bayley, M.R.C.S. Access—Northampton station, 1 ml.
- Norwich.** — *Heigham Hall*. Lic., Mr. A. Mottram. Res. Med. Supt., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe station, $1\frac{1}{2}$ miles. *See also* p. 930.
- Norfolk County Asylum*, Thorpe. 1000 beds. Res. Med. Supt., D. G. Thomson, M.D. Access—Whitlingham station, 1 mile. Norwich, $2\frac{1}{2}$ miles.
- Norwich City Asylum*, Hellesdon, near Norwich. Res. Phys. and Supt., Wm. Harris, M.D. Asst. Med. Off., Dr. A. Sykes. Access—Hellesdon sta., 1 mile.
- The Bethel Hospital for the Insane*. Res. Med. Supt., J. Fielding, M.D. Cons. Phys., Sir F. Bate-man, F.R.C.P. Access—Thorpe station, 1 mile. *See also* p. 926.
- Nottingham.** — *City Asylum*, Mapperley Hill. Med. Supt., E. Powell, M.R.C.S.
- Notts County Asylum*. Med. Supt., A. M. Jackson, M.D. Access—Radcliffe-on-Trent, 2 miles.
- The Coflice*. Res. Med. Supt., W. B. Tate, M.D. Access—Mid. and Great Northern station, $2\frac{1}{2}$ miles.
- Omagh.** — *District Asylum*. Res. Med. Supt., Geo., E. Carre, M.B. Access—Omagh station, $1\frac{1}{2}$ miles.
- Oxford.** — *Oxford County Asylum*. Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore station, G.W.R.
- Warneford Asylum*, Oxford, $1\frac{1}{2}$ miles (for private patients only). Res. Med. Supt., James Neil, M.D. Access—Oxford station, $2\frac{1}{2}$ miles. *See also* p. 931.
- Paisley.** — *Parochial East Asylum*. Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.
- Parochial Asylum*, Riccartbar. Med. Off., D. Fraser, M.D. Access—Paisley West, $\frac{1}{4}$ mile.
- Perth.** — *District Asylum*, Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.
- James Murray's Royal Asylum* (for private patients only), Perth. Phy. Supt., A. R. Urquhart, M.D., F.R.C.P. (Ed.). Access—Perth, under 2 miles. *See also* p. 935.
- Plympton.** — *Plympton House*, Plympton, South Devon. Res. Med. Supt., Dr. Alfred Turner. Access—Plympton, 1 mile; Marsh Mills, 2 miles; Plymouth, 5 miles. *See also* p. 932.
- Portsmouth.** — *Borough Asylum*. Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton station, $1\frac{1}{2}$ miles.
- Prestwich (near Manchester).** — *County Asylum*. Res. Med. Supt., Dr. F. Perceval. Access—Prestwich, 1 mile.
- Rainhill (nr. Liverpool).** — *County Asylum*. Res. Med. Supt., J. Wigglesworth, M.D. Access—St. Helen's, $2\frac{1}{2}$ miles; Rainhill, 1 mile.
- Rotherham (Yorkshire).** — *The Grange*, near Rotherham, 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, $\frac{1}{4}$ mile. *See also* p. 934.

- Salisbury.**—*Fisherton House Asylum*. Med. Supt., W. C. Finch, M.D. Acc.—Salisbury Stat., 5 minutes. *See also p. 926.*
Laverstock House. Prop., J. Haynes; Med. Supt. Res. Lic., Hy. J. Manning, M.R.C.S.
- Shrewsbury.**—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., D. F. Rambaüt, M.D. Access—Shrewsbury station, 2½ miles
- Sleaford.**—*Kesteven County Asylum.* Med. Supt., J. A. Ewan, M.D.
- Sligo.**—*District Asylum.* Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.
- Stafford.**—*County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.
Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Acc.—Stafford, 1 mile. *See also p. 929.*
- Starcross (near Exeter).**—*Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.
- Stirling.**—*District Asylum.* Med. Supt., Dr. George M. Robertson. Access—Larbert, 1½ miles.
- St. Alban's (Hill End).** *Herts County Asylum.* Med. Supt., A. N. Boycott, M.D. Access—Hill End station, G.N.R.
- St. Leonards-on-Sea.**—*Ashbrook Hall, Hollington (for ladies).* Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. W. H. Davis. Access—Warrior Square Station, 2 miles.
- Stone (near Aylesbury).**—*Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.
- Sutton (Surrey).**—*Chalk Pit House* (licensed for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.
- Tamworth (Staffs.).**—*The Moot House (for ladies).* Res. Prop., E. Hollins, M.A. Med. Attns. J. Holmes Joy, M.D., and C. H. Joy, M.D. Access—Tamworth, ¾ mile.
- Taunton.**—*Somerset & Bath Asylum,* Cotford, near Taunton. Res. Med. Supt., Mr. H. T. S. Aveline. Access—Norton Fitzwarren stat., 2 miles.
- Ticehurst (Sussex).**—*Asylum.* Props., Drs. H. & A. Newington. Access—Ticehurst road 3 miles, Wadhurst 4 miles.
- Tonbridge.**—*Redlands.* Res. Med. Supt., W. A. Harmer. Access—Tonbridge junc., S.E.R., 2½ miles.
- Virginia Water.**—*Holloway Sanatorium, Hospital for the Insane.* St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Offrs., W. Tinker, L.R.C.P., T. E. Harper, L.R.C.P., Rosina C. Despard, M.D., G. W. Smith, M.B. Access—Virginia Water sta., 5 mins. Seaside Branch, Hove Villa, Dyke Rd., Brighton. Med. Off., E. N. Edwards, M.R.C.S. *See also p. 930.*
- Wadsley (near Sheffield).**—*South Yorkshire Asylum.* Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 1 mile.
- Wakefield.**—*West Riding Asylum.* Res. Med. Supt. and Director, W. Bevan Lewis, L.R.C.P., Lon. Access—Kirkgate and Westgate station, 1 mile.
- Wallingford (Berks.).**—*Berkshire Asylum.*—Res. Med. Supt., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.
- Warwick.**—*Midland Counties Asylum,* Knowle, nr. Birmingham. Sec. and House Gov., A. H. Williams. Med. Off. R. H. Foster, M.R.C.S. Acc.—Knowle, ½ mile.
- Waterford.**—*District Asylum.* Res. Med. Supt., J. A. Oakshott, M.D. Access—Waterford and Kilkenny sta., 2 miles.
St. Patrick's Inst., Belmont Pk. Conducted by the Brothers of Charity. Med. Supt., W. R. Morris, M.B.
- Watford (Herts.).**—*Hillfield Lodge,* Aldenham (for ladies). Prop., Major E. D. Farmar-Bringinghurst. Access—Radlett or Bushey statns,

- Wells.**—*Somerset and Bath Asylum*, Wells, Som. Res. Med. Supt., C. F. Laing, M.B. Access—Wells, 2 miles; Masbury, $2\frac{1}{2}$ miles.
- Whitchurch (Salop).**—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., and C. H. Gwynn, M.D. Access—Whitchurch station, 1 mile.
- Whitefield (near Manchester.)**—*Overdale*. Res. Med. Supt., J. Holmes, M.D. Access—Prestwich and Whitefield sta., $1\frac{1}{2}$ miles; Molyneux Brow, $\frac{1}{4}$ mile.
- Whittingham (near Preston).**—*County Asylum*. Res. Med. Supt., Dr. J. F. Gemmel. Access—Grimsargh station, $1\frac{3}{4}$ miles; Whittingham station, 3 minutes.
- Winchelsea (Sussex).**—*Periveau House*, near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea stat., 1 mile.
- Witham (Essex).**—*The Asylum*. Licensed for both sexes. Apply to the Proprietor.
- Woking.**—*Surrey County Asylum*, Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, $1\frac{1}{4}$ miles.
- Worcester.**—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester station, 4 miles.
- York.**—*The Pleasaunce*, Heworth Moor (ladies only). Prop. & Med. Supt., G. I. Swanson, M.D. Access—York, $1\frac{1}{2}$ miles. See also p. 924.
- The Retreat*. Res. Med. Supt., Bedford Pierce, M.D. Access—York station, $1\frac{1}{2}$ miles. See also p. 929.
- North Riding of Yorkshire Asylum*. Res. Med. Supt., J. Trevelles Hingston. Access—York, 2 miles.
- York Lunatic Asylum*, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D., M.A. Cantab. Access—York station, 1 mile. See also p. 922.

TRAINING INSTITUTIONS.

- Bath.**—*Rock Hall House*, Combe Down, near Bath. For backward and imbecile children. Lady Supt., Miss Jane Quinton. Med. Off., J. H. H. Lawrence, M.R.C.S. Clerk, E. N. Fuller, LL.B., Bath.
- Bearsted (near Maidstone).**—*Bearsted House*. School and Home for Feeble-minded boys. Res. Supt. and Prop., G. T. A'Vard. Access—Bearsted, 5 mins.
- Chilcompton (nr. Bath).**—*Downside Lodge*. For children and adults. Med. Supt., Alex. Waugh, M.D. Access—Chilcompton station, about $\frac{1}{4}$ mile.
- Dublin.**—*Stewart Institution*, Palmerston, Chapelizod, Co. Dublin. For imbecile children. Med. Supt., Dr. F. E. Rainsford.
- Dundee.**—*Baldovan Asylum*. For the Training and Education of Imbecile Children. Matron, Miss Butter. Med. Off., Dr. Greig. Access—Baldovan, 1 mile.
- Kingston Hill.**—*Winchester House*. For backward and feeble-minded Children. Res. Med. Supt. Dr. Fletcher Beach. Acc.—Norbiton, S.W.R., 15 min. See p. 908.

Kingston-on-Thames (Surrey).—*Normansfield, Trematon & Conifers*, for backward and feeble minded of either sex. Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station. 8 minutes.

Lancaster.—*The Royal Albert Asylum* (for the feeble-minded of the Northern Counties. 650 patients). Principal and Sec., Jas. Diggins, J.P. Res. Med. Officer, Dr. A. R. Douglas. Access—Lancaster, 1 mile. *See also p. 925.*

Brunton House. A Home for special Private Pupils under training at the Royal Albert Asylum. *See also p. 925*

Larbert (Stirlingshire).—*Scottish National Inst.* (for Education of imbecile Children). Res. Supt., A. A. Skene. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas.,

A. J. Fitch, Virginia buildings, Glasgow. Access—Larbert stat., $\frac{3}{4}$ mile.

London (Upper Norwood, S.E.).—*Grosvenor*, 84, Auckland Road. Supt., Miss Arkell.

St. Mark's Road, W., No. 103. Supt., S. & G. Schöntheil, Ph.D.

Richmond (Surrey).—*Ancaster House*, Richmond Hill. A small and select Educational Establishment for backward, mentally-feeble or neurotic children. Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., Met. Dist. & N.L.R., 1 mile. *See also p. 909.*

Southgate (Middlesex).—*Brook House.* For Education & Training of the nervous and backward. Res. Med. Prop., Harry Corner, M.D.

Sanatoria for the Treatment of Tuberculosis.

The Editors desire to make this List as complete as possible, and will be obliged if authorities connected with any Sanatorium or Establishment in which "open air" or so-called hygienic methods of Treatment are employed, and the name of which does not appear below, will communicate with them in order that particulars may, if possible, appear in next year's issue of the Medical Annual.

Axbridge, Somerset.—*St. Michael's Home.* 41 beds, 24 male and 17 female. Apply to Sister in Charge. Med. Off., R. W. Statham, M.R.C.S. Access—Axbridge stn. Terms free.

Banchory, Scotland.—*Nordrach-on-Dee.* 52 beds. Res. Phys., David Lawson, M.A., M.D. (Ed.), James Snowie Cooper, M.D. Access—Banchory station, 2 miles, *via* Aberdeen.

Belbroughton, Worcs.—*Midland Open-air Sanatorium*, Bourne Castle. 24 beds. Apply, Secretary. Res. Med. Off., Geo. F. Phillpot, M.R.C.S. Access—Hagley (G.W. R.), Bromsgrove (M.R.).

Bexhill-on-Sea.—*Holne Chase.* 8 beds. Physicians, Drs. Wills and Harvey. Access—Station, $\frac{1}{4}$ mile.

The house fronts the English Channel, with an unbroken view extending from Hastings on the east, to Beachy Head on the west, is in a very open situation and close to the Golf Links. Bexhill has the highest record for sunshine, and the lowest for rainfall on the South Coast, and the climate is peculiarly beneficial to all cases of recoverable phthisis. Terms $3\frac{1}{2}$ to 6 guineas.

Blagdon, Bristol.—*Nordrach-upon-Mendip.* 40 beds. Res. Phys., R. Thurnam, M.D. Assist. Phys., Chas. Wheeler, M.D. Access—Wells or Cheddar, 8 miles; Langford station, 5 miles. Yatton

Junction, 11 miles. Terms 5 guineas. *See also p. 916.*

Bournemouth.—*Alderney Manor*, Parkstone. 26 beds. Res. Phys., Dr. W. Denton Johns. Access—Parkstone station, 2 miles.

National Sanatorium for Consumption and Diseases of Chest. (Patron: His Majesty the King). 71 beds. Sec., A. G. A. Major. Res. Phys., St. George Eyre Harris, M.D. Access—Bournemouth station, a mile. Terms 7/6 per week and 1 Governor's nomination.

Overton Hall, Poole Road. Prop., Dr. C. Guthrie Stein (Res.). 12 beds. Access—Bournemouth West, 7 minutes.

South Lodge, Poole Road. 14 beds. Prop., Mrs. Harley. Access—Bournemouth west, 5 minutes.

Stourfield Park, Pokesdown. 40 beds. Res. Physician, Frank Fowler, L.R.C.P., M.R.C.S.; assistant Phys., H. M. Bullock, L.R.C.P., M.R.C.S. Access—Bournemouth (Central) station, 3 miles.

The Firs Home (for advanced cases). 20 beds. Hon. Sec., Percy J. Duncan, M.D., Frogmore, Bournemouth. Hon. Med. Offs., A. E. B. Love, M.R.C.S., and P. J. Duncan, M.D. Lady Supt., Miss McGuire

- Bridge of Weir, Renfrewshire** (*Consumption Sanatoria of Scotland*). 80 beds, females only. Hon. Sec., . Res. Physician, H. Hyslop Thomson, M.D. Access—Bridge of Weir, 2 miles.
- Brighton.**—*Municipal Sanatorium*, for Brighton townfolk. Object: mainly educational. Physician, Dr. Arthur Newsholme, M.O.H. for Brighton. Particulars, Town Hall, Brighton.
- Chagford, Devon.**—*Dartmoor Sanatorium*, (near Exeter, Newton Abbot and Okehampton). Res. Med. Supt. & Prop., Dr. A. Scott Smith. Access—Moretonhampstead, G.W.R., 6½ miles; Okehampton station, L. & S.W.R., 11 miles.
- Cheddar, Somerset.**—*Engel Home*, for females only. 15 beds. Med. Supt., R. W. Statham, M.R.C.S. Apply to Lady Supt. Access—Cheddar station, 10 minutes.
- Cheltenham.**—*Cotswold Sanatorium*. Res. Phys., Dr. F. K. Etlinger. Address—Cotswold Sanatorium, near Stroud.
- Chiltern Hills Sanatorium.**—*Kingwood* (12 beds) and *Mailland Cottage* (6 beds), Peppard Common, Oxon. Res. Med. Propr., Dr. Esther Colebrook. Access—Reading, 5½ miles.
- Clare, Suffolk.**—*Richmond House*. 15 beds. Med. Sup., Dr. Jane Walker, 122 Harley Street, W. Access—Clare station, 1 mile.
- Colwyn Bay, N. Wales.**—*Hancry-ffordd Hygienic Home*. An open-air residence for patients who have undergone sanatorium treatment. Proprietor, Miss Matthews.
- Conway, N. Wales.**—*Nordrach in Wales, Pendyffryn Hall*. 18 beds. Res. Prop., Dr. G. Morton Wilson. Access—Penmaenmawr station 2 miles, Conway 3 miles. Carriages to meet. Terms 5 guineas.
See also p. 916.
- Crieff, Perthshire.**—*Ellerslie Sanatorium*. Res. Prop., Thompson Campbell, M.D. Access—Caledonian Railway, Crieff station ½ mile.
- Devon and Cornwall Sanatorium**, Didworthy, South Brent. For consumptive poor of the counties. Particulars: Hon. Sec., S. Carlisle Davis, Esq., 28 Westwell street, Plymouth.
- Dorking, Surrey.**—“*Woodhurst*” *Sanatorium* (for Ladies only), Tower Hill. 16 beds, Sec., Geo. Wright. Vis. Phys., Miss Mary R. McDougall, M.B., C.M. Ed. Access—L.B. and S.C. Rly. and the S.E. stations, both about 1 mile.
- Dundee Sanatorium**. 40 beds. For consumptive poor. Res. Phys., R. Campbell Macfie. Access—Auchterhouse station, 1½ mile.
- Durham.**—*Durham County Consumption Sanatorium*, Horn Hall, Stanhope. 30 beds, 21 male and 9 female. Sec., Mrs. M. L. Scurfield, 9, Rectory Terrace, Sunderland. Med. Sup., Dr. John Gray. Access—Stanhope station, 1 mile. Terms free or on small payments.
- Edinburgh, Craigleith.**—*Victoria Hospital for Consumption*. 60 beds. For the treatment of poor patients. Visiting Physicians, Dr. R. W. Philips and Dr. G. L. Gulland. Apply to the Secretary.
Woodburn, Morningside. 20 beds. Res. Med. Prop., Mrs. W. P. Mears, L.R.C.P.I., with resident and cons. Physicians. Terms 5 guineas. See also p. 914.
- Eversley, Hants.**—*Moorcote*. 15 beds. Med. Sup. Dr. Haydn Brown. Access—Wellington College, 4½ miles; Wokingham, 6 miles.
- Farnham, Surrey.**—*Crooksbury Sanatorium*. 22 beds. Res. Phys., Dr. Rufenacht Walters. Access—Farnham station, 3½ miles; Tongham, 2½ miles; Ash, 4 miles.

- Whitmead Sanatorium*. 19 beds. Res. Phys., J. Hurd-Wood, M.D. Apply Sec. Access—Farnham station, $3\frac{1}{2}$ miles.
- Fortbreda, Belfast.**—*Forster Green Consumption and Chest Hospital*. 38 beds. Vis. Phys., Drs. R. J. Purdon, J. Simpson, F. Howard Sinclair. Sec., A. Shaw, 2, May Street, Belfast. Access—Belfast, 2 miles. Mainly for the poor; 6 beds free; others by small payment.
- Hull.**—*Hull and East Riding Convalescent Home (Sanatorium)*. 30 beds. Sec., Benj. Brooks, Royal Infirmary, Hull. Med. Off., A. E. Sproulle, L.R.C.P. Access—Withernsea.
- Inverness-shire, Scotland.**—*The Grampian Sanatorium*, Kingussie. 20 beds. Res. Phys., Walter de Watteville, M.D. Access—Main Highland Rly., Kingussie station, $\frac{3}{4}$ mile.
Electric light throughout; sheltered & graduated pine-walks. Height above sea level, 860 feet. Opened in June, 1901. Terms 4 guineas per week.
- Ireland.**—See Fortbreda, Warrenpoint and Wicklow.
- Isle of Wight.**—*Royal National Hospital for Consumption*, Ventnor. Sec., Ernest Morgan, 34, Craven Street, Charing Cross, W.C. Res. Med. Officer, W. M. Davidson, M.B., M.R.C.P. Terms 10/- per week by recommendation from Governors.
St. Catherine's Home, Ventnor (for advanced cases). 12 beds, 6 male and 6 female. Apply to Sister Bernardine. Med. Off., H. F. Bassano, M.A., M.B. Access—Ventnor, 5 mins. drive. Terms, by selection 10/6 per week.
- Kinrosshire, Scotland.**—*Ochil Hills Sanatorium*. 60 beds. Sec., D. Hill Jack, 141, West George Street Glasgow. Res. Phys., Dr. Neill and Dr. Watt. Access—Kinross junction, 4 miles.
- Kirkmichael, Scotland.**—*Knock-sualtach*. 6 beds. Med. Supt., Mary F. Nannetti, L.R.C.P. Access—Blairgowrie station, 13 miles, from which coaches run.
- Leeds.**—*Leeds Sanatorium for Consumptives*, Gateforth, near Selby. 30 beds. Sec., Leonard Hawkesworth, 37 Great George st., Leeds. Terms free, for the Poor of Leeds only.
- Liverpool.**—*Liverpool Sanatorium*, Kingswood, Delamere Forest, Frodsham. 40 beds. Sec., Alfred Shawfield, 77a, Lord st., Liverpool. Res. Phys., Dr. Herapath Wood. Access—Frodsham, $3\frac{1}{2}$ miles (L. & N.W. Rly.). Terms 12/6 if nominated by a subscriber.
- London.**—*Brompton Hospital for Consumption and Diseases of Chest*. Sanatorium building at Frimley, will contain 100 beds. W. H. Theobald, sec. See also p. 901.
City of London Hospital for Diseases of Chest, Victoria Park, E. Open-air treatment provided. 164 beds. Sec., H. Dudley Ryder.
Margaret Street Hospital for Consumption and Diseases of the Chest, (for Out-Patients), 26 Margaret street, W. No beds in London. See *Worthing*.
Mount Vernon Consumption Hospital, Hampstead. Special facilities for the open-air treatment of consumption. Accommodation for 150 patients. Access—Finchley Road (Met.) station, 1 mile. The *Sanatorium at Northwood*, nearly completed, will accommodate 100 cases. Access—Northwood (Met.) station. *Out-patient departments* at Hampstead and Fitzroy Square, where patients are seen daily at 1 p.m. Hon. Visiting and Res. Staff. Free on recommendation of governors. Secretary, W. J. Morton.
See also p. 915.

- Royal Hospital for Diseases of the Chest*, 231, City Road, E.C. 80 beds. Med. Off., L. W. C. Macpherson, M.D. Apply to the Sec. Terms by letter.
- Long Stratton, Norfolk.**—*Fritton Sanatorium*. 5 beds. Res. Phys., Miss Mary Smith, L.R.C.P., L.R.C.S.Ed. Matron, Miss Wainwright. Access—Fornett station (G.E.) 4 miles, Norwich 10 miles.
- Maldon, Essex.**—*The Sanatorium*. Med. Off., Dr. W. E. Facey.
- Manchester.**—*Hospital for Consumption and Diseases of Throat and Chest*. Sanatorium at Bowdon, Cheshire. Sec., C. W. Hunt, Manchester. Res. Phys., D. Lloyd Smith, L.R.C.P. Access—Bowdon station, $\frac{1}{2}$ mile. For poor and working classes, after personal examination at Manchester.
- Margate, Kent.**—*Royal Sea-bathing Hospital*. 150 beds. Sec., A. Nash, 13, Charing Cross, London, S.W. Two Res. Surgs. Access—Margate West, $\frac{1}{4}$ mile. Terms for four week's stay, £2 8s. or £1 12s. according to age for patients with Governor's recommendation.
- Meathop, near Grange.**—*Westmoreland Sanatorium*. Res. Med. Supt., T. H. J. Hughes, M.R.C.S., L.R.C.P. Hon. Sec., Dr. W. Rushton Parker, Kendal. Access—Grange-over-Sands station, $2\frac{1}{2}$ miles. Terms, Free for County nominations.
- Nayland, Suffolk.**—*East Anglian Sanatorium*. 35 beds. Med. Supt., Dr. Jane Walker, 122 Harley Street, W. Access—Bures station, $3\frac{1}{2}$ miles.
- Norfolk.**—*Kelling Sanatorium*, Holt. Public for poor patients. Admission by nomination. Hon. Sec., Dr. H. W. McConnell. Res. Med. Officer, Mr. W. J. Fanning. Access—Holt station, *via* Norwich.
- Mundesley Sanatorium*, Mundesley. 20 beds. Res. Phys., Noel D. Bardwell, M.D. Access—Mundesley station, 1 mile.
- Nottingham.**—*Sherwood Forest Sanatorium*, for persons of limited means, resident in Notts and district. 26 beds. Sec., G. Sheldon, 36A, Bridlesmith Gate, Nottingham. Vis. Phys., Drs. J. O. Littlewood and A. Hunnard. Access—Mansfield, 3 miles. Free or for 10/- per week, on recommendation of subscribers.
- Ockley Sanatorium**, Surrey. Res. Phys., Dr. Clara Hind. Access—Ockley (L.B.&S.C. Ry.) 1 mile.
- Paignton, Devon.**—*Dunstone Park*. 16 beds. Res. Phys., T. Carson Fisher, M.D. Access—Paignton station, $1\frac{1}{2}$ miles.
- Painswick, Gloucestershire.**—*Painswick Sanatorium, Cotswold Hills*. Res. Phys. and Proprietor, W. McCall, M.D. Access—Stroud, 4 miles; Gloucester, 6 miles.
- Ringwood, Hants.**—*Linford Sanatorium*. 19 beds. Props. & Res. Phys., R. M. Smyth, M.D., and H. G. Felkin, M.D. Access—Ringwood station, $2\frac{1}{2}$ miles.
- Rudgwick, Sussex.**—*Rudgwick Sanatorium*. 14 beds. Res. Lady Med. Officer in charge. Access—Rudgwick station, 5 minutes; Horsham, 7 miles.
- Ruthin, N. Wales.**—*Vale of Clwyd Sanatorium, Llanbedr Hall*. Res. Props., Drs. G. A. Grace-Calvert and C. G. Fish. Access—Ruthin station, 2 miles. *See also p. 909.*
- Shotley Bridge, Durham.**—*Belle Vue*. 10 beds. Res. Phys., Dr. E. W. Diver. Access—Station, 1 mile; Durham and Newcastle, 14 miles. *See also p. 914.*
- St. Leonard's.**—*Eversfield Hospital*, West Hill. 55 beds, including 8 private wards. Sec., Miss Benwell. Res. Phys., T. Gambier, M.D. Fees 17/- weekly, or 13/- with subscriber's letter, available 4 weeks. Access—West St. Leonards S.E.R., West Marine L.B.S.C., within 5 minutes' walk.

Taunton. — *Timberecombe*. Apply Miss Garaway. 10 beds. Vis. Physician, Dr. Brown.

Torquay. — *Mildmay Consumptive Home*, for advanced cases only. Hon. Sec., Miss F. Gumbleton, Connemara, Torquay. Access—Torquay. 1 mile. Fees 10/6 weekly; or 7/- with subscriber's letter.

Western Hospital. 40 beds. Open Oct. to May. Sec., F. Manley. Terms 7/6 by nomination, 12/6 without.

Wallingford, Berks. — *Hailey Sanatorium*, Ipsden. 24 beds. Res. Phys., C.G. Higginson, M.R.C.S. Access—Goring station (G.W.R.), 4 miles; or Wallingford, 4 miles. Separate Châlets.

Warrenpoint, Co. Down. — *Ros-trevor Sanatorium*. Res. Phys., F. Howard Sinclair, M.D. High Frequency Electrical Installation. Access—Warrenpoint. Terms 3½ guineas. See also *f.* 912

Wells, Somerset. — *Mendip Hills Sanatorium*. 20 beds. Res. Phys., D. J. Chowry Muthu, M.D. Apply Res. Sec. Access—Wells station, 2¾ miles. Terms 3 to 4 guineas. See also *f.* 916.

Wicklow. — *Altadore Sanatorium*, Kilpedder, Co. Wicklow. 13 beds. Res. Phys., Dr. J. C. Smyth. Access—Dublin to Greystones, from which it is 5 miles. Carriages to meet.

The Royal National Consumption Hospital for Ireland, Newcastle, Wicklow. 46 beds for men, 20 for women. Hon. Sec., J. R. Orpen, 5, Leinster Street, Dublin. Res. Phys. & Registrar, B. H. Steede, M.D. Access—D.W.W. Rly. to Newcastle, Co. Wicklow, 3 mls. Minimum fees 7/- weekly on subscriber's recommendation and medical examination.

Wokingham. — *London Open-air Sanatorium*. 64 beds. Sec., H.W. Harris, 20, Hanover Square, London. Res. Phys., Dr. C. Chidell. Access—Wellington College (S.E. R.), 1½ miles; or Bracknell (L.S. W.R.), 4 miles.

Worthing — *Richmond House Convalescent Home*, in connection with Margaret Street Hospital for Consumption and Diseases of the Chest (for Out-Patients), 26 Margaret Street, London, W. Sec., Alice D. Brookes. 16 beds. Med. Off., Dr. W. Ayton Gostling. Acc.—Worthing, 12 mins. Payments by subscriber's letter, 11/6.

Inebriate Homes.

LICENSED UNDER THE ACTS, 1879-1900.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Chiswick and Spelthorne St. Mary are Roman Catholic Religious Institutions.
† Cradley Heath, Herne Hill, King's Lynn, and Torquay, are Church of England Temperance Society's Institutions.

MALES ONLY.

Battle (Sussex).—*Hancox House*.
Res. Supt., B. Ewart Gott. Med.
Supt., W. W. Jones, M.D.

Buntingford (Herts).—*Buntingford House Retreat*. Res. Med. Supt. and Secretary. Access—Buntingford (G.E.R.), 8 minutes.
See also p. 941.

Colinsburgh (Fife).—*Invernith Lodge Retreat*. Res. Med. Supt., Dr. J. Q. Donald. Access—Kilconquhar Station. *See also p. 937*

Dinas Mawddwy (Merionethshire).—*Plás-yu-Dinas* (Patients 18).—Res. Med. Supt. and Licensee, Dr. W. F. Walker, J.P. Access—Cemmes Road.
See also p. 939.

Folkestone.—*Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

Kingsland R.S.O. (Hereford).—*Street Court*. Res. Med. Supt., Dr. J. W. Smith. Access—Kingsland, $\frac{1}{2}$ mile. *See also p. 941.*

Rickmansworth (Herts).—*Dalrymple Home* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S., L.R.C.P. Access—Rickmansworth station, Metropolitan Railway, $\frac{1}{2}$ mile; L. & N.W. Railway, 1 mile. *See also p. 940.*

Twickenham.—*High Shot House*, (Patients 12). Res. Med. Supt., Thelwell Pike, M.D. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, $1\frac{1}{2}$ miles. *See also p. 938.*

MALE AND FEMALE.

Amesbury (Wilts).—*Amesbury House* (Patients 3). Res. Supt. and Med. Officer, P. J. Barcroft, M.R.C.P., F.R.C.S. Access—Salisbury, 8 miles; Porton station, 4 miles. *See also p. 939.*

Bristol.—*Brenty, Westbury-on-Trym*, for cases arising under the Licensing Act, 1902. (Patients 50). Res. Sup. and Med. Off., Dr. Fleck. Hon. Sec., Rev. H. N. Burden. Access—Clifton Down station, $3\frac{1}{2}$ miles.

FEMALES ONLY.

Chiswick.*—*St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, $\frac{1}{2}$ mile.

Cradley Heath† (Staffs.).—*Corngreaves Hall* (Patients 32). Lic., Miss Lyster. Med. Offcr., Dr. Wall. Hon. Secretary, J. H. Broscob, 29, Alcester road, Moseley, Birmingham. Access—Cradley and Old Hill Stations, 1 mile.

Fallowfield.—*The Grove Retreat*, near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs. A. T. Wilkinson, M.D., J. W. Hamill, M.D., and Dr. Margaret Bell. Access—Fallowfield station, 10 minutes.

See also p. 936.

Herne Hill.†—*Ellison Lodge*, Half Moon Lane (Patients 33). Res. Supt. Miss Manby.

King's Lynn† (Terrington, St. Clement's).—*Hamond Lodge*. (Patients 28). Res. Supt., the Sister in Charge. Access—Terrington, 1½ mile.

Leicester.—*Melbourne House*. (Patients 10). Prop., Mr. H. M. Riley. Med Supts., C. J. Bond, F.R.C.S., and R. Sevestre, M.A., M.D., Camb. Station, 2 miles.

See also p. 936.

Reigate (Surrey).—*Duxhurst*. (Patients 40). Supt., Sister in charge. Med. Supt., A. Walters, M.R.C.S. Access—Reigate, 4 mls

South Cave, Yorks.—*The Hermitage* (Patients 10). Res. Supt., the Matron. Sec., Mrs. T. R. Pentith, Sutton-on-Hull.

Spelthorne St. Mary* (Bedfont, Middlesex) — Apply to Sister in charge, C.S.M.V. Access—Feltham, S.W. Rly., 1 mile.

Licensed under Inebriates Acts. Females—Primarily Gentlewomen & Middle Classes 23. Treatment—Physical, Moral, and Spiritual.

Torquay.†—*Temple Lodge*. (Patients 22). Res. Sup., the Sister in Charge. Med. Off., W. Odell, F.R.C.S. Hon. Sec., Mrs. H. H. Erskine.

Wandsworth.—*Northlands Retreat*, North St., Old Wandsworth, S.W. (Patients 18). Med. Lic., Dr. J. Round. Lics., Misses Round.

HOMES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

MALE AND FEMALE.

Bristol.—*Bienty*, certified Inebriate Reformatory, Westbury-on-Trym. Beds 311, for cases under Sec. I. & II. of the Act. Res. Supt. and Med. Officer, Dr. Fleck. Hon. Sec., Rev. H. N. Burden. Access—Clifton Down, Redland, or Patchway Stations, 3½ miles.

FEMALES ONLY.

Ackworth (Yorkshire).—*North Midlands Inebriate Reformatory*. (Beds 90). Res. Supt., the Officer in Charge. Med. Off., Dr. Lawson. Access—Ackworth Station 1½ miles.

Ashford (Middlesex).—*St. Joseph's Home*. Beds 75, for Roman Catholic cases under Sec. II. of

the Act. Res. Supt., The Mother Superior. Med. Off., Dr. Morris F. Cock. Access—Ashford, 1 mile.

Bristol.—*Royal Victoria Home, Horfield*. (Beds 25.) Res. Sup., the Officer in Charge. Med. Off., Dr. Cotton. Hon. Sec., Rev. H. N. Burden. Access—Montpelier and Bristol Stations.

Chesterfield (Derbyshire).—*Midland Counties' Inebriate Reformatory, Whittington*. (Beds 157). Res. Sup., the Officer in Charge. Med. Off., Dr. Palmer. Access—Whittington Station ½ mile, Chesterfield 3 miles.

Dumfries.—*Mabie House*. Apply Mrs. Corner. Vis. Phys., Dr. J. Brownlee Shaw. *See also p. 941.*

Horley (Surrey).—*Farmfield*. (Beds 113.) For London cases, under Sec. II of the Act. Res. Supt., Miss Forsyth. Med. Off., Dr. C. F. Williamson

Lewes (Sussex).—*Southern Counties' Inebriate Reformatory, St. Anns, Lewes*. (Beds 120). Res. Sup., the Officer in Charge. Med. Off., Dr. Dow. Access—Lewes Station $\frac{1}{2}$ mile.

UNLICENSED HOMES.

FEMALES ONLY (*except Bristol, Dunvegan, Norwood, and Stonehaven*).

Bristol.—*Dunmurry*, Sneyd Park, near Clifton (Gentlefolk only, 3 of each sex). Res. Med. Prop., Jas. Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access Bristol or Clifton Down stations, $1\frac{1}{4}$ mile from the latter.

See also p. 936.

Croydon.—*Glendalough*, Morland Road (Patients 5). J. M. Hobson, M.D. Access—East Croydon, 10 mins.

Durham.—25 Allergate. Hon. Sec., Miss King.

Edinburgh.—*Queensberry Lodge*, Supt., Major Macartney. Med. Supt., Dr. William Russell. Access—Waverley station, $\frac{1}{2}$ mile.

See also p. 940.

Hounslow (Middlesex).—*West Holme*. Supt., Matron in Charge. Med. Supt., Dr. G. A. S. Gordon. Access—Hounslow, $\frac{3}{4}$ Dist. R $\frac{1}{4}$ mile.

Huddersfield (Yorks).—*High Flatts Sanatorium*. Supt., The Matron. Access—Denby Dale, $1\frac{1}{2}$ miles; Penistone sta., $3\frac{1}{2}$ miles.

Leicester.—*Tower House*. Prop., Mrs. Theobald. Med. Attendant. Dr. Clarke. Access—Leicester stat., $1\frac{1}{2}$ miles. *See also p. 940.*

Liverpool.—*Temperance Home*, 318, Upper Parliament Street. Supt., Miss A. J. Wilson. Med. Supt., C. Solomon, M.R.C.S.

London.—*Norwood Sanatorium*, 93, Church Road, Upper Norwood, S.E. Res. Med. Supt., C. A. McBride, M.D. Access—Crystal Palace station, 10 mins.

See also p. 939.

London.—*Weir Hall*, Edmonton. Access—Silver Street, (G.E.) 1 mile. Palmers Green, (G.N.) $1\frac{1}{2}$ mile. *See also p. 938.*

Stonehaven (N.B.)—*Elsick House*. Prop., George Spring. Access—Newton Hill, $1\frac{1}{2}$ miles.

West Derby (near Liverpool).—*Vermont Sanatorium*. Supt., Miss Mary M. Hocking. Hon. Med. Offis., Dr. H. Harvey and Dr. C. Thurstan Holland. Access—West Derby, $\frac{1}{4}$ mile; Tue Brook, $\frac{1}{4}$ mile; Edge Hill, 3 miles. *See also p. 938.*

Hydropathic Establishments of Great Britain.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry, which is *stamped for reply*. This will account for some omissions in the present edition.

- Aberdeen.** — *Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes. *See also* p. 946.
- Baslow.** — *Baslow Grand Hotel Hydropathic*, nr. Chatsworth Park. Res. Med. Supt., E. M. Wrench, F.R.C.S. Access—Bakewell station, 4 miles by 'bus.
- Bath.** — *Lansdown Grove House*, Lansdown, Bath. (Invalids only). Special arrangements for patients suffering from gout, rheumatism, and physical infirmities. Med. Supt., Dr. Percy Wilde. Access—Mid. or G.W. stat., Bath, about 1 mile. *See also* p. 913.
- Ben Rhydding.** — *Ben Rhydding*, Near Leeds, Bradford, or Harrogate. Phys., Thos. Scott, M.D. and Dr. W. R. Bates. Access—Station, a few hundred yards.
- Bexhill.** — *Wilton Court Hydropathic*, De Vere House. Res. Med. Supt., H. H. Hulbert, M.R.C.S.
- Bishops-Teignton (near Teignmouth).** — *The South Devon Health Resort*. Prop., C. F. Carpenter. Med. Supt., Arthur E. Hayward, M.R.C.S. Access—Teignmouth 2½ mile.
- Blackpool.** — *Matlock Hydro and Boarding House*, Station Road. Access—3 minutes' walk from South Shore station.
- Bournemouth (Hampshire).** — *Bournemouth Hydropathic*. Res. Prop., W. J. Smyth, M.D. Access—East sta. 1½ mile; West sta. ¼ mile. *See also* p. 943.
- Bridge of Allan.** — *Bridge of Allan Hydropathic Co.* Mngr, H. B. Higgins. Med. Supt., Dr. Macintosh. Access—Station, ½ mile.
- Bristol.** — *The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Grn. Res. Phys., W. J. Spoor, M.B., M.R.C.S.
- Burgess Hill (Sussex).** — *Wynnstay Hydrotherapeutic Sanatorium*. Prop. Mr. Richard Haynel. Access—Brighton, 9 miles.
- Bute.** — *Kyles of Bute Hydropathic*, Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.
- Buxton.** — *Buxton Hydropathic*, Man. Director, H. Lomas. Access—Station, 4 minutes.
Corber Hill Hydro, Clarendon House. Man., Miss L. Adams. Access—Buxton station, 5 mins.
Haddon Hall Hydro. Prop., Mr G. E. Hall.
- Clevedon (Somerset).** — *Clevedon Hydropathic*. Access—Clevedon, 1 mile.
- Clifton (near Bristol).** — *Clifton Grand Spa and Hydropathic*. Access—Clifton Down station, 1 mile; Bristol station, 1½ miles. *See also* p. 943.

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney Station, $2\frac{1}{2}$ miles. Muskerry Light Railway from Cork, station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane.—*Philp's Dunblane Hydropathic.* Perthshire. Res. Phys., Dr. Philp. Access—Dunblane station, $\frac{3}{4}$ mile. See also p. 949.

Edinburgh.—*Hydropathic.* Slateford. J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres.—*Cluny Hill Hydropathic.* Visiting Physician, Dr. Milligan. Access—Forres station, 1 mile; Inverness, 24 miles.

Grange-over-Sands.—*Hazelwood Hydropathic.* Physicians, Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway. Grange-over-Sands, $\frac{1}{4}$ mile.

Harrogate (Yorkshire).—*Harlow Manor Hydro.* Man. Mr. Fenn, Med. Supt., Dr. Dimmock.

The Cairn Hydropathic. Near Leeds and Bradford. Man., Mrs. Baker. Access—Harrogate, $\frac{1}{2}$ ml.

The Harrogate Hydropathic. Phys., M. B. Ray, M.D. Access—Harrogate station, $\frac{1}{2}$ mile.

Hexham (Northumberland).—*Tynedale Hydropathic.* Prop., F. G. Grant. Med. Supt., Dr. Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilkley (Yorkshire).—*Craiglands Hydropathic.* Props., Dobson, Bros. Res. Med. Supt., Henry Dobson, M.D., C.M.

Ilkley Wells House Hydropathic. Med., Supt. Thos. Scott, M.D. Manager, Mr. Ballardie. Access—Ilkley station, $\frac{1}{4}$ mile.

The Spa Hydropathic. Near Leeds and Bradford. Manageress, Miss Pugsley. Med. Supt., Thos. Johnstone, M.D. Access—Ilkley, 3 minutes.

Kilmalcolm (Renfrewshire).—*Hydropathic.* Access—Greenock, 7 miles; 16 miles from Glasgow, S.W.R.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Res. Med. Supt., Dr. F. E. Allen. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.* (Woodhall Spa). Res. Med. Supt., R. Cuffe, M.R.C.S.—Apply to secty.

Llandudno.—*Hydropathic and Winter Residence.* Med. Supt., James Craig, M.B. Access—Llandudno Station, 5 minutes.

Malvern.—*The Malvern Hydropathic.* Res. Prop., J. C. Fergusson, M.D. Access—Gt. Malvern station, $\frac{1}{4}$ mile. See also p. 945.

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells station, G.W.R., $\frac{1}{2}$ mile; Great Malvern station, 2 miles.

Matlock.—*Matlock House Hydropathic.* Matlock. Phys., W. Moxon, M.D., J.P. (Newest Electric Heat and Light Therapy), Dowsing Radiant Heat and Light Baths, High Frequency and Sinusoidal currents, X-rays apparatus, &c., &c. Access—Matlock Bridge (M.R.), $\frac{1}{2}$ mile. See also p. 946.

Rockside Hydropathic, Matlock Med. Supts., Drs. A. L'Estrange Orme and Marie Goodwin. Access—Matlock Bridge, $\frac{3}{4}$ mile.

800 feet above sea level. Pure mountain air; south-west aspect; sunshine above normal; rainfall under normal. Baths. Massage. Write for illustrated booklet.

Smedley's Hydropathic, Matlock Bridge. Phys., W. C. Sharpe, M.D., and a Res. House Phys. Access—Matlock Bridge station, $\frac{1}{2}$ mile; Omnibus. See also p. 944.

- Melrose.**—*Waverley Hydropathic.* Con. Phys., Dr. Wade. Access—Melrose station, 1 mile.
- Moffat.**—*The Moffat Hydropathic.* Man., W. W. Rathie. Med. Supt., Dr. Huskie.
- Peebles.**—*Peebles Hydropathic and Hotel.* Resident Specialist. All the latest Electric Light Baths, with Douche and Massage, Static Electricity, Pure Air and Sun Baths, Kneipp's Meadow, &c.—The Cure Regime of a German Bad with the comfort and luxury of a high-class modern Hotel. Access—Peebles station, $\frac{3}{4}$ mile. Bus meets trains. *See also* p. 947.
- Rhyl (North Wales).**—*The Claremont Hydropathic.* Manager,
- Rothsay.**—*Glenburn Hydropathic.* Med. Supt., Dr. Marshall. Access—Wemyss Bay, 1½ hours' sail. *See also* p. 949.
- Scarborough.**—*Hydropathic,* West End Park. Manageress, Mrs. Hinchliffe. Access—Scarborough (N.E.Ry.), $\frac{1}{4}$ hour.
- Shandon.**—*Shandon Hydropathic.* Consulting Phys., Dr. Douglas Reid; Phys., Dr. Wm. R. Sewell. Access—N.B.R. and Steamer.
- Skelmorlie.**—*Wemyss Bay Hydro- pathic.* Med. Sup., Ronald Currie, M.D. Access—Wemyss Bay sta., $\frac{1}{2}$ mile.
- Southport (Birkdale Park).** *Smedley Hydropathic.* Med. Supt., J. G. G. Corkhill, M.D. Southport or Birkdale stats. *See also* p. 943.
- Kenworthy's Limes Hydropathic* (51, Bath Street). Phys., Drs. A. B. Kenworthy and Maccall. Access—Chapel St., Lord St., or Central station, $\frac{1}{4}$ mile.
- "Sunnyside" Hydropathic Comfy.* Man., J. Marshall. Phys., Dr. F. A. Ernest Barnardo. Access—Southport stats., $\frac{1}{2}$ mile.
- Tunbridge Wells.**—*The Spa.* Phys., Dr. Pardington. Access—Station, about $\frac{1}{2}$ mile. *See also* p. 946.
- Ulverston and Barrow-in-Furness.**—*Comshead Priory Hydro- pathic.* Med. Supt., Dr. Ashburner. Access—Ulverston station.
- Watford.**—*The Hall,* Bushey. Man., Col. Coyne. Med. Supt., Dr. F. Smith. Access—L. & N.W. Ry. 1 mile.
- Windermere.**—*Windermere Hydro- pathic,* 9 miles from Kendal. Access—Windermere (L. & N.W. R.) 1 mile. Furness Rly. (Bow- ness Landing), $\frac{1}{4}$ mile. Pier on Lake, about 300 yards.

Private Homes for Invalids.

Bournemouth.—*Victoria and Bournemouth Nursing Institute and Home*, for paying patients, Cambridge Road. Apply the Matron.
See also p. 912.

Brighton.—*Staveland House*, 13, Lansdowne Place, Hove. Medical and Surgical Home for paying patients. Access—Brighton station 1 mile, Hove $\frac{3}{4}$ mile.

Buxton.—*Corbar Tower*, Dietetic and Medical Home. Apply Mrs. Owen.
See also p. 910.

Medical and Residential Home, 10, Terrace Road. Apply Miss Wilde.
See also p. 908.

Eastbourne.—*Tresillian*, 14, Cornfield Road. Apply Lady Supt.
See also p. 910.

Evesham (Worcs.)—*Greenhill*. Principal, Mrs. Hoddinott. Access—Mid. and G.W.R. stations, Evesham.

Hadlow Down (Buxted, Sussex).—*South Beacon*. Prop., Philip H. Harmer. For the care and treatment of ten gentlemen mentally affected, but who are not ill enough to be certified. Fifteen years' experience. Access—Buxted, 3 miles; Heathfield, 4 miles.
See also p. 909.

Jedburgh.—*Abbey Green*. Res. Prop., Wm. Blair, M.D. Access—N.B.R., Jedburgh. *See also p. 912.*

London.—*Clapton Surgical and Medical Home*, 10 Southwold Road, Upper Clapton. Apply Lady Supt.

Netley House, 15, Henrietta St., Cavendish Square, W. Apply Sister-in-charge. *See also p. 912.*

Nursing Home, 29, Upper Montagu Street, W. Prop., Mrs. Bounsall. Access—Baker Street station (Metropolitan), 5 minutes.

Private Medical and Surgical Home, 25, Clapton Common. Res. Med. Supt., Dr. Hy. J. Buck.

St. Thomas's Home, St. Thomas's Hospital, Albert Embankment, S.E. Apply The Steward, St. Thomas's Hospital, S.E. Access Waterloo, 5 minutes.

See also p. 913.

Plymouth.—*Woodside House*, 4, Woodside. Lady Supt., Miss L. Beckwith. Access—Mutley station—five minutes' drive.

Stanmore, Middlesex.—*SCARLET FEVER Convalescent Home (The Mary Wardle)*. Med. Off., J. D. Thomas, M.B. Hon. Sec., Miss M. Wardell. Access—Stanmore. (L. & N.W.R.), 2 miles.

See also p. 913.

Westgate-on-Sea.—*Southcroft Private Nursing Home*. Apply Miss Cooke. *See also p. 903.*

Nursing Institutions and Associations.

The information given here is necessarily brief: but further particulars may be added, in small type, at the rate of 2¹/₂ per dozen words.

LONDON.

Auxiliary Nurses' Society of the Royal British Nurses' Assoc., 10, Orchard Street, W. Secy., Miss A. J. Hobbs.

Supplies fully-trained Hospital Nurses—Medical, Surgical, Mental, Fever, and Maternity.

Baker Street Assoc. of Trained Nurses (Regd.), 15, Baker Street, W. Supt., Miss Masters.

Baker Street Trained Nurses' Institute, 9, Upper Baker Street, N.W., close to Station. Lady Supt., Miss M. A. Hooper.

Belgravia Nursing Home, 39 and 41, Royal Avenue, Chelsea, S.W. Principal—Mrs. Walter Pye.

Surgical, Medical non-infectious, Confinement, & Weir-Mitchell cases received. Terms from 5 to 12 guineas per week. Fully qualified Nurses also sent out.

Blackheath Nursing Inst., 9, Montpelier Row, Blackheath, S.E. Principal—Miss Duncan.

Brompton Hosp. Private Nursing Department, S.W. Mrs. Price, Lady Supt.

Clapham, Brixton & Surrey Inst. of Trained Nurses, 210, Clapham Rd., S.W. Supt., Mrs. Pyle.

Clapton Medical and Surgical Home, 8 and 10 Southwold Rd., Up. Clapton. Supt., Miss Dugard.

Nurses three years certificated, supplied night or day at the shortest notice.

Colonial Nursing Assoc., Imperial Institute, London, S.W. Hon. Sec., Mrs. Ernest Debenham.

Elgin Nursing Inst., The, 258, Elgin Avenue, W. Supt., Miss F. S. Webb.

Medical, Surgical, and Maternity Nurses supplied. A few patients in the Home.

General Nursing Institute, 5, Mandeville Place, Manchester Square, W.

Guy's Hospital Trained Nurses' Inst., 14, St. Thomas Street, S.E.

Telegraphic address, "Guy's Institution, London." Telephone No. 882 Hop.

Hamilton Assoc. for Providing Trained Male Nurses, 57, Park St., Grosvenor Sq., W.

Hampstead Hospital Nursing Institute, Parliament Hill, N.W. Sister Supt., Mrs. Ebbetts.

Hanover Inst. for Nurses and Private Hosp., 22, George St., Hanover Square, W. Lady Supt., Miss Sophia Walker.

Hospital for Sick Children, Private Nursing Home, Gt. Ormond St., W.C. Matron, Miss Gertrude Payne. Sec., Adrian Hope.

London Association of Nurses, 123, New Bond St., W. Lady Supt., M. Firth.

London Homœopathic Hospital Nursing Inst., Great Ormond Street, W.C. Lady Supt., Miss Brew.

London Hospital Private Nursing Inst., Whitechapel Road, E. Matron, Eva C. E. Luckes.

Male Nurses Association, 23, York Place, Baker Street, W. Supt., Wm. Gutteridge.

Certificated Male Nurses and Masseurs supplied. Telegrams, "Assistiamo, London"; Telephone, 2437 Paddington.

Male Nurses (Temperance) Co-operation, Lim., 10, Thayer Street, W. Sec., F. Rouse Walsh.

Male and Female Temperance Nurses Co-operation, 45 Beaumont Street, Portland Place, W. G. Gordon, Secy.

Maternity Nursing Association, 5, Little James Street, Gray's Inn Road, W.C. Supt., Sister Ruth.

Provident Institution for nursing poor married women in their homes during their confinement. Pupils trained in midwifery and monthly nursing. For fees apply to Superintendent.

Metropolitan Nursing Assoc., 23, Bloomsbury Sq. For nursing the Sick Poor. Supt., Miss Hadden.

Middlesex Hospital Institute, 17, Cleveland Street, W.

Midwives' Inst., 12, Buckingham St., Strand, W.C. Apply Sec.

Mildmay Nursing Home, 9 & 10, Newington Green, N. Supt., Miss Carter.

Nervous & Mental Disorders, Nurses for, 1 Culross Street, Grosvenor Sq., W. Supt., Mrs. Caldwell.

Nurses' Co-operation, 8 New Cavendish Street, W. Supt., Miss Roberts.

Nursing Home and Institute, Netley House, 15, Henrietta St., W. Supt., Miss Dupuis.

See also p. 912.

Nursing Institute, 39 and 41, Boundary Road, N.W. Supt., Mrs. Dalison.

Nursing Sisters' Inst., 4, Devonshire Sq., E.C. Lady Supt., Miss Hulme.

Nursing Sisters of St. John the Divine, 21, Drayton Gardens, S. Kensington. Sist. Superior, A. I. Beaver.

Paddington and Marylebone District Nursing Association, 4, Randolph Road, W. Supt. Miss K. Perssé.

Pembroke Nursing Inst. and Home for Paying Patients, 116, Adelaide Road, N.W. Matron, S. Gee Wainwright, cert. L.O.S.

Queen Victoria's Jubilee Inst. for Nurses, 120, Victoria Street, S.W. For supplying trained District Nurses for the Poor. Gen. Supt., Miss Peter.

Registered Nurses' Society, 431, Oxford Street, W. Sec., Miss Cartwright.

Richmond Nursing Inst., 2, The Green, Richmond, Surrey. Supt., Miss Plumbe.

St. Bartholomew's Hosp. Trained Nurses Inst., 13, West Smithfield.

St. John Ambulance Association, St. John's Gate, Clerkenwell. Chief Secy., Col. Sir H. Perrott, Bt.

See also p. 912.

St. John's House, 7 & 8, Norfolk St., Strand. Supt., Sister Superior.

Southwark, Newington & Walworth District Nursing Assoc. 37, West Sq., S.E. Supt., Miss E. H. Courtenay.

Up-Country Nursing Assoc. for Europeans in India. Hon. Sec., H. M. Birdwood, C.S.I., LL.D., Dalkeith House, Cambridge Park, Twickenham.

Copies of Rules for Engagement of Nurses, and information regarding work, can be obtained from Mrs. Sheppard, 10, Chester Place, Regent's Park, London.

Victoria Hospital, Nursing Staff, Chelsea, S.W. Matron, Miss Watson.

Westminster Home for Nurses, 27, Queen Anne's Gate, S.W. Matron, Miss Longbottom.

Wigmore Nurses' Co-operation and Home for Paying Patients, 59, Weymouth St., W. Princ., Miss S. A. Warburton.

Nurses for every kind of case, also by the day or hour.

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 Baillière, Tindall & Cox, 8, Henrietta Street, W.C.
 Bale, J. Sons & Danielsson, Lim., Great Titchfield Street, W.
 Black, A. & C., Soho Square, W.
 Cassell & Co. (Lim.), Ludgate Hill (and Printers)
 Churchill, J. & A. 7, Great Marlborough Street
 Clay William F., 18, Teviot Place, Edinburgh

Collins, Wm. Sons & Co., Lim., Glasgow and London
 Cornish Bros., New St., Birmingham
 Fannin & Co. Lim., Grafton Street, Dublin
 Glaisher, Hy. J., 57, Wigmore St., W.
 Green, Wm. & Sons, Edinburgh and 12, Norfolk Street, W.C.
 Griffin, C. & Co. Lim., 12, Exeter Street, Strand, W.C.
 Hirschfeld Bros., Lim., 13, Furnival Street, E.C.
 Johnston, W. & A. K., Edina Works, Edinburgh
 Kimpton, Hy., 13, Furnival St. E.C.
 Lewis, H. K. 136, Gower St. W.C.
 Lippincott, J. B. Co. 5 Henrietta Street, W.C.
 Livingstone, E. & S. Teviot Place, Edinburgh
 Longmans, Green & Co. 39 to 41, Paternoster Row, E.C.
 Low (Sampson), Marston & Co. Lim., Fetter Lane, E.C.
 Macle hose, J. & Sons, 61, St. Vincent Street, Glasgow
 Macmillan & Co. Lim., St. Martin Street, W.C.
 Medical Publishing Co. Lim., Bartholomew Close, E.C.
 Murray, John, Albemarle Street, W.
 Oliver & Boyd, Edinburgh
 Paul (Kegan), Trench, Trübner & Co. Lim., 43, Gerrard Street, W.
 Pentland, Young J. 38, West Smithfield, E.C. and 11, Teviot Place, Edinburgh
 Rebman Limited, 129, Shaftesbury Avenue, W.C.
 Renshaw, Henry, 356, Strand, W.C.
 Richards, Grant, 48, Leicester Sq.
 Saunders, W. B. & Co., 9, Henrietta Street, W.C.
 Scientific Press Lim., 28 and 29, Southampton Street
 Simpkin, Marshall, Hamilton, Kent, & Co. Lim., Stationers' Hall Court & Paternoster Row, E.C.
 Smith, Elder & Co. 15, Waterloo Place, S.W.
 Stenhouse, A. University Avenue, Hillhead, Glasgow
 Thacker W. & Co., 2, Creed Lane, E.C.

Warren, Wm. M. 111, Queen Victoria Street, E.C.
 Whittaker & Co. White Hart St., Paternoster Square
 Wright, John & Co. Stone Bridge, Bristol (and Printers)

Sanitary Engineers.

Crapper, T. & Co. 50 to 54, Marlborough Road, S.W.
 Doulton & Co., Lim., Albert Embankment
 Jennings, George, Lim., 65 & 67, Lambeth Palace Road, S.E.
 Jones, John, Church Street, Chelsea
 McDowall, Steven & Co. (Lim.), 4, Upper Thames Street, E.C.
 North British Plumbing Co. 86, Newman St. Oxford St. W.
 Reid, A. W. & Co. 69, St. Mary Axe
 Sanitary Engineering Co. 65, Victoria Street, S.W.
 Winser & Co. Lim., 52, Buckingham Palace Road, S.W.

Sanitary Surveyors.

Carter, H. C.E. 65, Victoria St. S.W.
 Hallett Walter & Co., 102 & 104, Harrow Road, W.
 London & Suburban Sanitary Survey Association, 34, Victoria St.
 Sanitary Engineering Co. 65, Victoria Street, S.W.
 Sanitary Survey Association, 85, Gower Street, W.C.
 Tidman, Ed., C.E. 34, Victoria St.

Surgical Instrument and Appliance Manufacturers.

Allen & Hanburys Lim., 48, Wigmore Street, W.
 Arnold & Sons, West Smithfield
 Bailey W. H. & Son, 38, Oxford St.
 Brady & Martin, Newcastle-on-Tyne
 Cambridge Scientific Instrument Co. Lim., Cambridge
 Carter, Messrs., 6A, New Cavendish Street, W.
 Cocking, J. T. Plymouth
 Coles, William & Co., 5, Sackville Street, Piccadilly, W.
 Cox, Alfred & Sons, 120, New Bond Street, W.
 Coxeter, James & Son, 4 and 6, Grafton Street, W.C.

Critchley, J & Sons, 18, Great George Street, Liverpool
 Dinneford & Co. 180, New Bond St. W.
 Domen Belts Co. 456, Strand, W.C.
 Down Bros., Lim., 21, St. Thomas's Street
 Ernst, Fr. Gustav, 80, Charlotte Street, Fitzroy Square, W.
 Evans & Wormull, 31, Stamford St. S.E.
 Fannin & Co. Lim. Grafton St. Dublin
 Ferris & Co. Bristol
 Formalin Hygienic Co., Lim., 3, Lloyd's Avenue, E.C.
 Gale, Geo. & Sons, Lim. Birmingham
 Galen Manufacturing Co. Lim., Wilson St., New Cross Road.
 Gardner, J. & Son, 32, Forrest Road, Edinburgh
 Gray, Joseph & Son, Truss Works, Sheffield
 Grossmith, W. R. 110, Strand
 Hawksley, T. 357, Oxford St. W.
 Haywood J. H., Castle Gate, Nottingham
 Hills & Co. 46, Newcomen Street, Boro', S.E.
 Hooper & Co. 7, Pall Mall, East
 Hutchinson, W. & H. Sheffield
 Huxley, E. 13, Old Cavendish St. W.
 Krohne & Sesemann, 37, Duke St., Manchester Square, W.
 Lynch & Co. Lim. 192, Aldersgate St.
 Maw, S. Son & Sons, 7 to 12, Aldersgate Street, E.C.
 Mayer & Meltzer, 71, Great Portland Street, W.
 Montague, J. H., 101, New Bond Street, W.
 O'Connor Extension Co., 2, Bloomsbury Street, W.C.
 Reynolds & Branson, Lim., 13, Briggate, Leeds
 Rogers, F. A., 327, Oxford St., W.
 Salmon, H. R. 42, Beaumont St. W.
 Salmon, Ody & Co. 157, Strand
 Schall, K. 55, Wigmore Street, W.
 Schramm, K. R. Gt. Castle Street, Oxford Circus, W.
 Statham, H. & Co., Corporation St. Manchester
 Sumner, R. & Co. Lim., Lord Street, Liverpool
 Walters, F. & Co., 52, Fore St., E.C.

Ward, John, 246 & 247, Tottenham Court Road

Weiss, J. & Son, Lim., 287, Oxford Street, W.

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Lymph is supplied, free of charge, on application to National Vaccine Establishment, St. Stephen's House, Cannon Row, Westminster, London, S.W.

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Association for the supply of pure Vaccine Lymph, 14a, Great Marlboro' Street, W.

Birmingham Calf Lymph Establishment, 204, Victoria Road, Aston

Calf Vaccine Institution, 16, Coleman Street, E.C.

Dakin Bros., 82, Middlesex St., E. Fannin & Co., Ltd., Dublin

Faulkner's Vaccine Institution, 16, Endell St., Bloomsbury, W.C.

Ferris & Co. Bristol

Hime, Dr., Bradford, Yorks.

Incorporated Liverpool Institute of Comparative Pathology, Runcorn Jenner Institute for Calf Lymph, 73, Church Road, S.W.

Maw, S. Son & Sons, 7 to 12, Aldersgate Street, E.C.

Rebman, F. J. 129, Shaftesbury Avenue; W.C.

Renner's (Dr.) Establishment, 186, Marylebone Road, N.W.

Roberts & Co. (Dr. Chaumier's), 76, New Bond Street, W.

Surgical Supply Assoc., Manchester Wyleys, Lim., Coventry

Medical and Scientific Periodicals, etc.

American Journal of the Medical Sciences—Monthly, 20/- per annum—J. C. Nimmo, 14, King William Street, W.C.

Australian Medical Gazette—Monthly 2/-—Baillière, 8, Henrietta Street, W.C.

Analyst—Monthly 1/-—Baillière, 8, Henrietta Street, W.C.

Anatomy and Physiology, Journal of—Quarterly, 24/- per annum—Griffin & Co., Exeter St., W.C.

Annals of Surgery—Monthly 2/-—Cassell & Co., Lim., Ludgate Hill, E.C.

Anthropological Journal—Half-yearly 10/-—3, Hanover Square.

Balneology, &c., Journal of—Quarterly 2/-—Bale, Sons, and Danielsson, Lim., Great Titchfield Street, W.

Birmingham Medical Review—Monthly 6d—Percival Jones, Lim., Edmund St., Birmingham

Botanical Gazette (10 numbers yearly)—28, Essex Street, Strand, W.C.

Botanical Magazine—Monthly 3/6 per annum—Reeve & Co. 6, Henrietta St., Covent Garden

Brain—Quarterly 3/6—Macmillan and Co. Lim., St. Martin St.

Bristol Medico-Chirurgical Journal—Quarterly 1/6—J. W. Arrow-smith, Bristol

British and Colonial Druggist—Weekly 3d—44 Bishopsgate Street without, E.C.

British Gynaecological Journal—Quarterly 3/6—Bale, Sons, & Danielsson, Ltd., Gt. Titchfield Street, W.

British Homœopathic Society, Journal of—Quarterly, 2/6—Bale, Sons, & Danielsson, Gt. Titchfield Street

British Journal of Nursing—Weekly 1d.—11, Adam Street, W.C.

British Medical Journal—Weekly 6d—42^c Strand, W.C.

British Sanatoria Annual—2/6—Bale, Sons, & Danielsson, Ltd., Gt. Titchfield Street W.

Caledonian Medical Journal—Quarterly 1/-—A. Macdougall, Mitchell Street, Glasgow

Chemical and Metallurgical Society of South Africa, Proceedings of the—Annually 21/-—Simpkin & Co., Paternoster Row

- Chemical Industry—Journal of Society of—Fortnightly 30/- per annum—East Harding Street.
- Chemical Society, Journal of the—Monthly, 40/- per annum—Gurney & Jackson, 1, Paternoster Row, E.C.
- Chemist and Druggist, the—Weekly 4d, 10/- per ann.—42, Cannon St.
- Chemists and Druggists, Register of—Annual 5/-—17, Bloomsbury Square
- Clinical Journal—Weekly 3d—Bartholomew Close
- Clinical Society, Transactions of the—Annually, net 12, 6—Longmans, 39, Paternoster Row
- Dental Association, Journal of British—Monthly 1/-—Baillière, 8 Henrietta Street, W.C.
- Dental Record—Monthly 6d—6, Lexington St., Golden Square
- Dental Science—British Journal of—1st and 15th, 6d—J. P. Segg & Co. 291, Regent Street, W.
- Dentist's Register—Annually 3/9—General Medical Council, 299, Oxford Street, W.
- Dermatological Society of Great Britain and Ireland, Transactions of the—Edited by A. Shillitoe, 1902-3—Annually 5/-—H. K. Lewis, Gower Street, W.C.
- Dermatology—British Journal of—1/- Monthly—H. K. Lewis, 136, Gower Street, W.C.
- Dublin Journal of Medical Science—Monthly 2/-—Fannin & Co., 1 imtd.
- Edinburgh Hospital Reports—Yearly 12/6—Young J. Pentland, Teviot Place, Edinburgh
- Edinburgh Medical Jour.—Monthly 2/-—Young J. Pentland, Teviot place, Edinburgh
- Entomologist—Monthly 6d—4, Stationers' Hall Court, E.C.
- Entomologist's Monthly Magazine—Monthly 6d—1, Paternoster Row, E.C.
- Epidemiological Society of London—Transactions of the—Annually—Shaw & Co.
- Geological Magazine—Monthly 1/6—37, Soho Square, W.
- Geological Society, Journal of—Quarterly 5/-—Longmans & Co.
- Geologist's Association's Proceedings—Bi-monthly 1/6—E. Stanford, 27, Cockspur Street
- Glasgow Medical Journal—Monthly 2/-—A. Macdougall, Mitchell Street, Glasgow
- Guy's Hospital Gazette—Fortnightly 6d—42, Southwark Street.
- Guy's Hospital Reports—Yearly 10/6—J. & A. Churchill, 7, Great Marlborough Street
- Health—Weekly 1d—358, Strand
- Homœopathic Review—Monthly 1/-—E. Gould & Son, Lim., 59, Moorgate Street, E.C.
- Homœopathic World—Monthly 6d—12, Warwick Lane, E.C.
- Hospital Weekly 3d—28 and 29, Southampton St., W.C.
- Hygiene, Journal of—Quarterly 7/-—Ave Maria Lane, E.C.
- Inebriety, British Journal of—Quarterly 5/-—Baillière, Tindall & Cox
- International Medical Magazine—Monthly, 6/6 per annum—48, Old Bailey, E.C.
- Knowledge—Monthly 6d—326, High Holborn
- Lancet—Weekly 7d—423, Strand
- Laryngology, Rhinology, & Otology, Journal of—Monthly 2/-—Bartholomew Close
- Laryngoscope, the—Monthly 1/6—Baillière, 8, Henrietta Street.
- Linnæan Society, Journal of—Annually 3/-—14, Henrietta St.
- Linnæan Society, Transactions—Irregular. Price varies—Society's Apartments, Burlington House
- Liverpool Medical Chirurgical Journal 6/6 per annum—Half-yearly—H. K. Lewis, Gower Street, W.C.
- Medical Age—Semi-monthly, 6/- per annum—W. M. Warren, 111, Queen Victoria Street, E.C.
- Medical Annual—Annually 7/6—J. Wright & Co. Bristol

- Medical Chronicle—Monthly 1/6 —
27, St. Ann Street, Manchester
- Medical Directory—Annually 14/-
—J. & A. Churchill, 7, Great
Marlborough Street
- Medical Magazine—Monthly 1/- —
62, King William Street, E.C.
- Medical Press & Circular—Weekly
5d—A. A. Tindall, 8 Henrietta
Street, W.
- Medical Register—Annually 6/- —
299, Oxford Street, W.
- Medical Review—Monthly 1/6—66,
Finsbury Pavement, E.C.
- Medical Review of Reviews—
Monthly, 6/- per annum—H.
Kimpton, 13, Fournival Street,
E.C.
- Medical Student's Register—An-
nually 2/6—54, Gracechurch St.
- Medical Temperance Review —
Monthly 2d.—33, Paternoster
Row, E.C.
- Medical Times & Hospital Gazette—
Weekly 2d—11, Adam St., W.C.
- Medico-Chirurgical Society of Edin-
burgh, Transactions of the—
Vol. XXII, New Series, Session
1902-1903, 8/6—W. F. Clay,
Edinburgh.
- Mental Science, Journal of— Quar-
terly 5/-—J. and A. Churchill,
7, Great Marlborough Street
- Meteorological Record—Quarterly,
1/6—E. Stanford, 27, Cockspur
Street
- Meteorological Society, Journal of
the Royal—Quarterly 5/- —E.
Stanford, 12-14, Long Acre,
W.C.
- Microscopical Science, Quarterly
Journal of—10/-—J. and A.
Churchill, 7, Great Marlborough
Street
- Middlesex Hospital Reports —
Yearly, 2/6 — H. K. Lewis,
Gower Street, W.C.
- Midland Medical Journal—Monthly
4d.—128, Edmund Street, Bir-
mingham
- Mind—Quarterly 3/- —Williams &
Norgate, Henrietta Street, W.C.
- Naturalist—Monthly 6d—259, Hyde
Park Road, Leeds
- Nature—Weekly 6d—Macmillan &
Co. Lim., St. Martin's Street,
W.C.
- New Sydenham Society—Irregular
—Subscription 21/- —H. K.
Lewis, 136, Gower Street
- New York Medical Journal—Weekly
33, Bedford Street, W.C.
- New York Medical Record—Weekly
6d—Kegan Paul & Co., Char-
ing Cross Road, W.C.
- Nursing Directory—Annually 3/- —
28 & 29, Southampton Street
- Nursing Notes—Monthly 2d.—12,
Buckingham Street, W.C.
- Obstetrics and Gynæcology of the
British Empire, Journal of —
Monthly 2/6 — Baillière, 8,
Henrietta Street, W.C.
- Odontological Society, Transactions
of—Monthly during Sessions
2/6—87, Great Titchfield Street,
W.
- Ophthalmic Hospital Reports—
Yearly 5/-—J. & A. Churchill,
7, Great Marlborough Street
- Ophthalmic Review—Monthly 1/-
—59, Long Acre, W.C.
- Ophthalmological Society's Trans-
actions—Yearly 12/6—J. and A.
Churchill, 7, Great Marlborough
Street
- Otological Society of the United
Kingdom, Transactions of—
yearly, 10/-—J. & A. Churchill,
7, Great Marlborough Street.
- Pathology & Bacteriology, Journal
of—Quarterly—21/- per annum
—Y. J. Pentland, West Smith-
field, E.C.
- Pharmaceutical Journal— Weekly
4d—8, Serle Street, W.C.
- Pharmaceutical Society, Calendar of
—Annually 2/- — 17, Blooms-
bury Square
- Pharmacy, Monthly Magazine of—
Monthly 6d—Burgoyne, Bur-
bidge & Co. 16, Coleman St.
- Physical Therapeutics, Journal of—
Quarterly 1/6—Bale, Sons, and
Danielsson, Great Titchfield
Street
- Physiology, Journal of—21/- per
volume—Ave Maria Lane

Polyclinic — Monthly, 21/- per annum—Bale, Sons & Danielsson, Lim., Great Titchfield St.
 Practitioner — Monthly 2/- — The Practitioner, Lim., 30, Holborn.
 Psychical Society, Proceedings of the —Occasionally—Kegan Paul and Co., 43, Gerrard Street, W.
 Public Health — Monthly 1/- — 9, Adelphi Terrace, Strand, W.C.
 Quarterly Medical Journal — 7/- per annum — 342, Glossop Road, Sheffield.
 Quekett Microscopic Club, Journal of—Half-yearly 3/6—Williams and Norgate, 14, Henrietta St., Covent Garden
 Registrar General's Return of Births, Deaths & Marriages—Weekly, Quarterly & Annually — Eyre & Spottiswoode, 9, East Harding Street, E.C.
 Röntgen Ray, Archives of the—Monthly, 16/- per annum—129, Shaftesbury Avenue, W.C.
 Royal College of Surgeons' Calendar —Annually 1/- — Taylor and Francis, Red Lion Court, Fleet Street, E.C.
 Royal Microscopical Society, Journal of—Bi-Monthly, 30/- per annum—Williams & Norgate, Henrietta St., Covent Garden
 Sanitary Journal—Monthly 1/- — 34, Victoria Street, S.W.
 Sanitary Record—Weekly 3d; 12/6 per annum—5, Fetter Lane
 Saunders' Year Book of Medicine and Surgery—Annually, 2 vols., net each 13/-—Saunders & Co., Henrietta Street, W.C.
 Science Gossip — Monthly 6d. — 110, Strand
 Scientific American — Weekly, per annum 18/- —Kegan Paul & Co. 43, Gerrard Street, W.
 Scientific American Supplement—Weekly, per annum 25/-—Kegan Paul & Co., 43, Gerrard Street, W.
 Scottish Medical & Surgical Journ. —Monthly 2/- —43, Castle St., Edinburgh

State Medicine, Journal of—Monthly 2/- — Baillière, 30, Holborn, E.C.
 St. Bartholomew's Hospital Nurses' League News—Half-yearly 6d. —Baillière, 8, Henrietta Street, W.C.
 St. Bartholomew's Hospital Reports — Yearly 8/6 — 15, Waterloo Place
 St. George's Hospital Gazette — Monthly 6d—Baillière, 8, Henrietta Street, W.C.
 St. Thomas's Hospital Reports—Yearly 8/6—J. & A. Churchill, 7, Great Marlborough Street
 The Broadway: or Westminster Hospital Gazette—Monthly 6d —Baillière, 8, Henrietta Street
 Therapeutic Gazette—Monthly, 10/- per annum—W. M. Warren, 111, Queen Victoria Street, E.C.
 Therapist, the—Monthly 6d—1, 3, and 5, Marylebone Lane, W.
 Treatment — Monthly 7d — 129, Shaftesbury Avenue, W.C.
 Tropical Medicine, Journal of—Fortnightly 1/-—Bale, Sons, & Danielsson, Lim., Great Titchfield Street
 Tuberculosis — Quarterly 6d— 30, Holborn, E.C.
 Veterinary Journal—Monthly 1/6—Baillière, 8, Henrietta Street, W.C.
 Veterinary Surgeons, Register of the Royal College of—Yearly 2/6—Baillière, 8, Henrietta Street.
 West London Medical Journal—Quarterly 1/6—Bale, Sons, and Danielsson, Ltd., Great Titchfield Street, W.
 Westminster Hospital Reports—Yearly 6/- —H. J. Glaiser, 57, Wigmore Street, W.
 Year Book of Pharmacy—Annually 10/-—J. & A. Churchill, 7, Great Marlborough Street
 Zoological Society of London, Proceedings—Yearly — Longmans & Co., Paternoster Row
 Zoologist—Monthly 1/- — Simpkin and Co. Paternoster Row

The Medical Annual Note Book.

It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. (These pages are indexed under the word "Notes.")

ANTIPHLOGISTINE. THE DENVER CHEMICAL MFG. CO., DENVER.

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LONDON: 110, Cheapside, E.C.

Wholesale and Retail Agents—Messrs. ALLEN & HANBURY, Ltd; Messrs. FRANCIS NEWBERRY & SONS, London; Messrs. ROBERTS & Co., 76 New Bond Street, London, W.; Messrs. JOHN SANGER & SONS, 2, Winsley Street, London, W.; Messrs. EVANS & Co. Liverpool; Messrs. J. THOMPSON, Ltd., Liverpool; Messrs. SOUTHALL, BROS. & BARCLAY, Birmingham; Messrs. JAMES WOOLLEY, SONS & Co., Ltd., Manchester; Messrs. SMITH AND SONS, Norwich; Messrs. THOS. CHRISTY & SON, Old Swan Lane, E.C.; Messrs. MAY, ROBERTS & Co., 9 & 11, Clerkenwell Road, E.C.; Messrs. WILLIAM EDWARDS & SON, 157 Queen Victoria Street and 239, Upper Thames Street, E.C.; Messrs. RAIMES, CLARKE AND Co., Edinburgh; W. E. WARRINGTON, Malta, and ST. ANDREW'S PHARMACY, Madras India.

See page xxxiii.

NOTES.

GAUTIER FRÈRES' ESTABLISHED
1755.
FINE LIQUEUR BRANDY.

(20 YEARS OLD.)

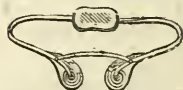
See Advertisement, page xlviii.

NOTES.

COLES' SPIRAL SPRING TRUSS.

WILLIAM COLES & CO. removed from
225, PICCADILLY, W., to

5, Sackville St., Piccadilly, LONDON, W.



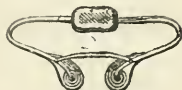
ADDRESSES (PRIVATE).

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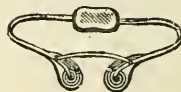
NURSES.

Note whether Midwifery or Sick Nurses, their terms and private addresses.

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INSTRUMENTS, APPLIANCES, OR MATERIALS WANTED.

MANCHESTER MEDICAL AGENCY.

3,500 Medical Men have applied to this Agency (which is managed solely by Mr. STEVENSON in the interests of his clients) during the past $3\frac{1}{2}$ years for advice, assistance, arbitration, or audit.

For further particulars, see Advertisement, p. xxxiv.

Not to be Controverted.

The "LANCET" says: "The statement that

Cadbury's Cocoa

is an absolutely pure article cannot be controverted in view of the Results of Analysis, which in our hands this excellent article of food has yielded.

CADBURY'S is the STANDARD OF HIGHEST PURITY at present attainable in regard to Cocoa."

Guy's Hospital Gazette says: "CADBURY COCOA may be considered as the highest type of a pure Cocoa. The special manipulation to which it has been subjected (removal of a certain amount of fat, etc.) has resulted in the formation of a product which from practical experience we can say is most tempting to the palate, possesses high nutritive power, and that it exerts the property attributed to theobromine of being a great restorer of muscular activity."

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CADBURY'S is Cocoa

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ABSOLUTELY PURE, therefore BEST.

80th YEAR.

YORKSHIRE INSURANCE CO.

(ESTABLISHED AT YORK, 1824.)

**FIRE — LIFE — ANNUITIES — EMPLOYERS' LIABILITY —
PERSONAL ACCIDENT — BURGLARY.**

Capital (Authorised) £1,000,000 | Accumulated Fund - £1,500,000
„ (Subscribed) £556,460 | Annual Income nearly £400,000

Head Office - - - YORK.

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SPECIMEN RATES. — Annual Premium to insure the Sum of £100.

Age next Birth- day.	Premium Payable for the whole of Life.		Limited Payments.				Age next Birth- day.
			Table V. With Profits.		Table VI. Without Profits.		
	Table I. With Profits.	Table II. Without Profits.	20 Pay- ments only.	25 Pay- ments only.	20 Pay- ments only.	25 Pay- ments only.	
25	£2 3 10	£2 16 1	£3 3 3	£2 15 11	£2 12 1	£2 6 0	25
30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birth- day.	Table III. With Profits.		Table IV. Without Profits.		Table IX. With Deferred Profits.		Age next Birth- day.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 19 9	£2 11 1	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 14 3	3 1 7	30

The attention of Medical and Professional Men generally whose incomes frequently determine on their decease, is especially called to a new scheme of

LIFE ASSURANCE and OLD AGE PENSIONS.

Full Particulars and Leaflet on application.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

ACCIDENT DEPARTMENT.—Policies covering **53 Diseases**, in addition to Accidents, now granted

Offices at **BIRMINGHAM, BRISTOL, CARDIFF, DUBLIN, DUNDEE, EDINBURGH, GLASGOW, HULL, LEEDS, LIVERPOOL, MANCHESTER, and NEWCASTLE.**

APPLICATIONS FOR AGENCIES INVITED.

INDEX TO LIFE ASSURANCE OFFICES.

A, when Established; B, C, D, Annual Premiums to Insure £100 on death with Profits, at the age of 30, 40, and 50; E, Assurance and Annuity Funds, exclusive of Paid-up Capital. M, Mutual Offices; P, Proprietary Offices.

Those marked with an asterisk (*) in the E column have not sent revised figures for 1903.

TITLE, &C., OF OFFICE.	A	B	C	D	E
Abstainers and General, Life and Accident, Carrs Lane, Birmingham. <i>Sec.</i> , R. A. Craig, A.I.A.					£
.. <i>P</i>	1883	40 11	55 10	82 3	*215,000
Alliance, Fire and Life, Bartholomew Lane, E.C. <i>Gen. Man.</i> , Robert Lewis	<i>P</i>	1824	48 9	64 5	90 9
Atlas, Fire & Life, 92, Cheapside, L.C. <i>Act.</i> , Robert Cross. <i>Sub. Man.</i> , A.W. Yeo. <i>Gen. Man.</i> , Saml. J. Pipkin.	<i>P</i>	1808	49 3	63 7	88 8
British Equitable, Life, Queen St. Place, E.C. <i>Man.</i> , J. W. Fairey. <i>Further particulars see page 854</i>	<i>P</i>	1854	49 -	66 -	91 3
British Workman's and General, Life and Endowments, Broad Street Corner, Birmingham. <i>Chairman</i> , F.T. Jefferson, J.P. <i>Sec.</i> , S. J. Port, F.C.I.S. <i>Further particulars see page 856</i>	<i>P</i>	1866	46 2	62 1	89 6
Caledonian, Fire and Life, 19, George Street, Edinburgh. <i>Gen. Man.</i> , D. Deuchar. London Offices, 82, King William Street, E.C. & 14 Waterloo Place, S.W.	<i>P</i>	1805	48 9	64 6	88 6
City of Glasgow, Life, 30, Renfield Street, Glasgow. <i>Gen. Man.</i> , William S. Nicol. London Office, 12, King William St., E.C. <i>Lon. Man.</i> , J. D. Milne	<i>P</i>	1838	49 6	64 6	89 10
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. <i>Act. & Man.</i> , F. B. Wyatt. <i>Sec.</i> , W. N. Neale. <i>Further particulars see page 855</i>	<i>M</i>	1829	46 4	62 2	87 4
Clerical, Medical and General, Life, 15, St. James' Square, and 1, King William Street, E.C. <i>Act.</i> , W. J. H. Whittall	<i>P</i>	1824	48 7	66 9	96 3
Colonial Mutual, Life and Annuity, 33, Poultry. <i>Man.</i> , Edward W. Browne	<i>M</i>	1873	47 4	63 2	89 9
Commercial Union, Fire, Life and Accident 24, 25, and 26, Cornhill, E.C. <i>Act.</i> , A. D. L. Turnbull	<i>P</i>	1861	49 5	64 2	87 8
Co-operative, Life, Fidelity, and Fire, Long Millgate, Manchester. <i>Sec.</i> , James Odgers. <i>Further particulars see page 859</i>	<i>P</i>	1867	45 8	61 5	88 4
Eagle, Life, 79, Pall Mall, S.W. <i>Gen. Man.</i> and <i>Sec.</i> , Geo. R. Jellicoe	<i>P</i>	1807	50 8	65 5	91 4
Economic, Life, 6, New Bridge Street, Blackfriars. <i>Act. and Sec.</i> , G. Todd, M.A., F.I.A.	<i>M</i>	1823	44 4	59 6	85 5
Edinburgh, Life, Endowments, and Annuities, 22, George Street, Edinburgh. <i>Man.</i> , A. Hewat, F.F.A., F.I.A. <i>Sec.</i> , T. M. Gardiner. London Office, 11, King William St., E.C. <i>Sec.</i> , F. Griffith	<i>P</i>	1823	47 7	63 2	80 -
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. <i>Gen. Man.</i> , Albert G. Scott	<i>P</i>	1839	49 6	65 2	90 11
Equitable Life Assurance Society, Mansion House Street, E.C. <i>Act.</i> , H. W. Manly, F.I.A.	<i>M</i>	1762	53 5	67 11	90 7
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. <i>Act.</i> , A. F. Burridge, F.I.A.	<i>P</i>	1841	48 10	64 6	90 9
Friends' Provident, Life, Annuities, &c., Bradford, Yorkshire. <i>Act. and Sec.</i> , John Bell Tennant	<i>M</i>	1832	48 -	64 -	89 7
General Life, 103, Cannon Street, E.C. <i>Man. and Sec.</i> , John Robert Freeman. <i>Further particulars see page 856</i>	<i>P</i>	1837	49 10	65 4	92 8

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on Death, with Profits, at the age of 30, 40 and 50*; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital*. M, *Mutual Offices*; P, *Proprietary Offices*.

TITLE, &C., OF OFFICE.	A	B	C	D	E
Gresham, Life, St. Mildred's House, E.C. <i>Man.</i> and <i>Sec.</i> , James H. Scott P	1848	49 -	65 8	94 3	£ 5,123,232
Guardian, Fire, Life, Accident and Burglary 11, Lombard St., E.C., and 21, Fleet Street. <i>Sec.</i> , T. G. C. Browne P	1821	48 10	64 6	89 3	3,136,890
Hand-in-Hand Fire, Life and Annuities, 26, New Bridge St., E.C. <i>Sec. & Act.</i> , H. C. Threlton M	1896	55 2	73 10	104 4	3,085,765
Law Life, 187, Fleet Street. <i>Man.</i> , E. H. Holt. <i>Joint Acts.</i> , A. B. Adlard and J. E. Fauks .. P	1823	49 4	64 10	91 -	4,051,819
Law Union & Crown, Life, Fire, Accident & Annuities, 126 Chancery Lane. <i>Gen. Man.</i> , A. Mackay P	1825	48 4	64 -	89 10	4,263,265
Legal and General Life, 10, Fleet Street, E.C. <i>Act. and Man.</i> , E. Colquhoun P	1836	50 9	65 11	90 9	3,682,814
Life Association of Scotland, 82, Prince's Street, Edinburgh. <i>Man.</i> , John Turnbull Smith. <i>Sec.</i> , J. Sharp. London Office, 5, Lombard Street. <i>Sec.</i> , J. C. Wardrop P	1838	50 -	65 4	93 4	5,204,142
Liverpool and London and Globe, Fire, Life and Annuities, 1 Dale St., Liverpool. <i>Gen. Man. & Sec.</i> , John M. Dove. London Office, 7, Cornhill, E.C. <i>Act.</i> , W. F. Somerville F.I.A. P	1836	49 3	65 6	91 3	5,583,493
London and Lancashire, Life, 66 & 67, Cornhill, E.C. <i>Gen. Man. & Act.</i> , W. P. Clirehugh. <i>Sec.</i> , G. W. Mannering P	1862	46 10	62 4	86 10	1,743,668
London Assurance Corporation, Fire, Life and Marine, 7, Royal Exchange. <i>Man. of Life Dept.</i> , James Clunes. <i>Act.</i> , A. G. Hemming P	1720	49 6	64 11	91 5	2,152,103
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. <i>Sec.</i> , T. V. Cowling. <i>Gen. Man.</i> , Thos. Neill .. P	1881	48 11	64 7	92 -	469,925
London Life Association, Lim., 81, King William St., E.C. <i>Act. and Sec.</i> , C. D. Higham, F.I.A. M	1806	60 4	78 10	108 4	4,618,760
Marine and General Mutual, Life and Marine, 14, Leadenhall St., E.C. <i>Act. and Sec.</i> , S. Day. F.I.A. M	1852	48 10	65 11	91 11	1,162,184
Metropolitan Life, 13, Moorgate St., E.C. <i>Sec.</i> , B. Woods M	1835	49 9	60 4	92 -	2,081,440
Mutual Life Assoc. of Australasia, 5, Lothbury, Bank, E.C. <i>Sec.</i> , Alfred Gilbert M	1860	47 -	63 -	91 -	1,710,020
National Assurance of Ireland, Fire, Life, Annuities, and Accident, 3, College Green, Dublin. London Office, 47, Cornhill, E.C. P	1822	48 7	64 3	88 10	369,857
National Mutual Life, 39, King Street, Cheapside, <i>Act. and Man.</i> , Geoffrey Marks, F.I.A. <i>Joint Secs.</i> , H. G. Rowsell and H. J. Lockwood. <i>Asst. Act.</i> , A. Levine. M.A., F.I.A. M	1830	43 4	63 7	89 6	2,080,072
National Provident, 48, Gracechurch Street, E.C. <i>Act. and Sec.</i> , Arthur Smither M	1835	50 2	66 3	91 1	5,878,924
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. <i>Gen. Man.</i> , C. Seton Lindsay. <i>Dirce. Gen. of Agencies</i> , T. J. Pulling. <i>Sec.</i> , Wm. R. Collinson, F.C.I.S. M	1845	48 3	66 -	96 11	68,000,000
North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princes Street, Edinburgh. <i>Life Man. and Act.</i> , London H. Cockburn, <i>Sec.</i> , R. Carmichael. <i>Further particulars see page 853</i> P	1809	49 10	66 1	91 11	12,324,055
Northern Assurance, 1, Moorgate St., E.C. <i>Gen. Man.</i> , H. E. Wilson P	1830	40 -	64 8	90 10	4,109,816
Norwich Union, Life, Norwich. <i>Gen. Man. and Act.</i> , J. J. W. Denchar. London Office, 50, Fleet Street, E.C. <i>Further particulars see page 857</i> .. P	1808	45 8	59 6	85 3	4,737,755

A, when Established; B, C, D, Annual Premiums to Insure £100 on death, with Profits, at the age of 30, 40 and 50; E, Assurance and Annuity Funds, exclusive of Paid-up Capital. M, Mutual Offices; P, Proprietary Offices.

TITLE, &C., OF OFFICE.	A	B	C	D	E
Patriotic Life, Fire, Accident, Employers' Liability, Fidelity Guarantee, and Burglary, 9, College Green, Dublin. <i>Man.</i> , B. H. O'Reilly. <i>Act.</i> , Saml. Hunter. London Office, 69, King William Street, E.C. <i>Man.</i> , Charles E. Strong .. P	1824	48 8	64 5	90 4	253,036
Pearl, Life, London Bridge, City, E.C. <i>Man.</i> , P. J. Foley .. P	1864	49 -	65 -	92 -	1,670,130
Pelican & British Empire, Life, 70, Lombard St., 57, Charing Cross. <i>Gen. Man.</i> , G. H. Ryan, F.I.A. P	1797	48 11	64 7	90 3	4,003,403
Provident Clerks and General Mutual Life Assurance Association, 27 and 29, Moorgate Street, E.C. <i>Sec.</i> , John E. Gwyer .. M	1840	46 4	62 8	92 2	2,244,250
Provident, Life, 50, Regent St. <i>Sec.</i> , H. W. Andras P	1806	49 5	64 6	90 2	3,334,591
Prudential (Ordinary), Life, Holborn Bars. <i>Sec.</i> , D. W. Stable. <i>Further particulars see page 854</i> P	1848	49 6	65 11	91 11	24,477,420
Refuge, Life, Oxford Street, Manchester. <i>Joint Mans.</i> , R. Wm. Green & John W. Proctor. London Office, 29, New Bridge Street .. P	1864	49 3	65 9	91 9	2,475,574
Rock, Life, Annuity, Capital in Redemption, Workmen's Compensation, Accident, Guarantee and Burglary, 15, New Bridge Street, E.C. <i>Act.</i> , G. S. Crisford, F.I.A. .. P	1806	42 5	55 11	81 2	2,221,145
Royal, Fire, Life and Annuities, Royal Insurance Buildings, Liverpool. <i>Man.</i> , Chas. Alcock. London Offices, Lombard St. <i>Sec.</i> , Jno. H. Croft P	1845	49 9	64 1	88 3	1,340,776
Royal Exchange Assurance, Fire, Life, Annuities, &c., Royal Exchange, and 29, Pall Mall. <i>Act.</i> , H. E. Nightingale, F.I.A. .. P	1720	49 2	64 10	90 1	2,302,449
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. <i>Sec.</i> , J. G. Phillips.. P	1864	48 8	64 8	90 6	943,273
Scottish Amicable, Life, St. Vincent Place, Glasgow. <i>Man.</i> , N. B. Gunn. <i>Sec.</i> , W. G. Spens M	1826	51 9	66 3	90 1	4,375,375
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. <i>Man. & Act.</i> , G. M. Low. <i>Secs.</i> , J. J. McLauchlan and D. V. Mills. London Office, 19, King William St., E.C. <i>Sec.</i> , F. R. Leftwich M	1831	50 -	65 5	90 6	4,851,240
Scottish Imperial, Life, 183, West George Street, Glasgow. <i>Man and Act.</i> , James Stirling, F.F.A. London Office, 15, King William Street, E.C. P	1825	46 7	63 5	91 7	589,225
Scottish Life, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. <i>Man.</i> , David Paulin, F.R.S.E. London Office, 13, Clements Lane, King William Street, E.C. <i>Sec.</i> , George Struthers .. P	1821	49 5	64 6	90 5	725,754
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. <i>Man.</i> , H. E. Marriott. London Office, 8, King Street, E.C. <i>Man.</i> , C. E. M. Hudson. P	1876	40 8	54 7	79 7	513,459
Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. <i>Man.</i> , J. G. Watson. <i>Sec.</i> , J. Lamb. <i>Assist. Sec.</i> , B. T. Boothby. <i>Act.</i> , W. G. Walton. London Offices, 17, King William Street E.C., and 17, Pall Mall, S.W. .. M	1837	42 4	56 6	83 2	12,500,000
Scottish Temperance, Life and Accident, 105, St. Vincent St, Glasgow. <i>Man.</i> , Adam K. Rodger. London Office, 96, Queen Street, Cheapside. <i>Man.</i> , W. A. Bowie .. P	1883	48 6	63 9	89 10	767,423
Scottish Union and National, Fire, Life, and Annuities, 35, St. Andrew Square, Edinburgh. <i>Gen. Man.</i> , J. A. Cook. <i>Sec.</i> , J. K. Macdonald. London Office, 3, King William Street, E.C. <i>Sec.</i> , William G. Glennie. .. P	1824	50 -	65 -	90 -	4,153,472
Scottish Widows' Fund, Life and Survivorship, 9, St. Andrew Square, Edinburgh. <i>Man. & Act.</i> , A. H. Turnbull. <i>Sec.</i> , J. G. C. Cheyne. London Office, 28, Cornhill, E.C. <i>Sec.</i> , J. W. Miller M	1815	51 9	66 3	90 7	16,500,000

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TITLE, &C., OF OFFICE.	A	B	C	D	E
					£
Standard Life, 3, George Street, Edinburgh. <i>Man. and Act.</i> , S. C. Thomson. London Offices, 83, King William Street, and 3 Pall Mall East. <i>Sec.</i> , J. H. W. Rolland P	1825	48 11	64 5	89 -	10,281,612
Star, Life, Annuities, Endowments, 32, Moorgate Street, City. <i>Act. and Sec.</i> , H. G. Hobson .. P	1843	48 9	64 11	90 6	5,616,642
Sun, Life, 63, Threadneedle Street, E.C. <i>Act.</i> , R. Sewell, C.A., F.F.A. <i>Sec. & Gen. Man.</i> , E. Linnell P	1810	49 2	66 6	94 2	4,846,701
Union, Fire and Life, Cornhill, and Baker Street. <i>Sec.</i> , C. Darrell. <i>Gen. Man.</i> , J. Powell. <i>Act.</i> , L. K. Pagden P	1714	48 9	64 6	90 10	2,935,098
United Kingdom Temp., &c., Life, 1, Adelaide Place, London Bridge. <i>Sec.</i> , Johnson Brooks .. M	1840	48 10	64 11	90 6	7,600,000
University, Life, 25, Pall Mall, S.W. <i>Act. & Sec.</i> , R. Todhunter, M.A. P	1825	49 11	65 4	91 5	939,495
Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. <i>Sec.</i> , Arthur J. Cook, A.I.A. M	1860	49 3	65 7	93 -	122,148
Wesleyan and General, Life, Annuities, Sickness, Corporation St., Birmingham. <i>Gen. Man.</i> , R. A. Hunt, F.S.S., A.I.A. London Office, 101, Finsbury Pavement, E.C. M	1841	43 9	66 6	96 3	710,559
Westminster and General, Life, 28, King St., Covent Garden, W.C. <i>Act.</i> , Ernest Woods, F.I.A. .. P	1830	43 10	65 -	90 6	657,783
Yorkshire, Fire and Life, St. Helen's Square, York. London Office, 2, Bank Buildings, Princes Street. <i>Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page 248</i> P	1824	40 1	64 6	91 7	973,511

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Med. Prof., and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £170,000.

ESTABLISHED 1809.

NORTH BRITISH

and MERCANTILE

INSURANCE COMPANY.

President - - HIS GRACE THE DUKE OF SUTHERLAND, K.G.
Vice-President - THE MOST HON. THE MARQUESS OF ZETLAND, K.T.

TOTAL FUNDS over **£16,300,000** sterling.
TOTAL REVENUE over **£3,600,000** „

LIFE DEPARTMENT.

STRONG RESERVES. VALUABLE BONUSES. LIBERAL CONDITIONS.

Policies on Male and Female Lives from £100 upwards.	Endowments, Term Insurances, Survivorships.
Family Settlement Policies in various forms	Interim Bonus Additions.
5% Investment Policies.	Insurances payable in lifetime carry- ing Investment and Annuity Options.

NEW BUSINESS TRANSACTED.

Year.	Life Policies issued for	Received as Prices of Annuities.
1898	£1,560,937	£253,229 15 8
1899	1,505,508	321,162 11 2
1900	1,573,034	190,641 15 0
1901	1,597,986	256,352 6 7
1902	1,755,027	273,826 1 4

ANNUITY BRANCH.

IMMEDIATE ANNUITIES on one or more Lives.

SURVIVORSHIP ANNUITIES to one Life after another.

PENSIONS on a new and advantageous system.

FIRE DEPARTMENT.

Property of nearly every description, at home and abroad, insured at the Lowest Rates. Losses by Lightning, Damage by Explosion of Gas in buildings not forming part of any Gas Works, made good. Rents of Buildings insured.

Head Offices: { LONDON: 61, Threadneedle Street, E.C.
 { EDINBURGH: 64, Princes Street.

Branches and Agencies throughout the World

Prudential Assurance Compy.,

LIMITED,
HOLBORN BARS, LONDON.

Directors:

EDGAR HORNE, Esq., *Chairman.*

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Actuary: FREDK. SCHOOLING, Esq. **Assist. Actuary:** E. A. RUSHER, Esq.

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Assist. Managers: F. HAYCRAFT, Esq. A. C. THOMPSON, Esq.

Joint General Managers: THOS. C. DEWEY, Esq. WM. HUGHES, Esq.

**Every description of Life Assurance and Annuity
Business Transacted.**

INVESTED FUNDS - £50,000,000.

The Last Annual and Valuation Reports can be had on application.

BRITISH EQUITABLE

ASSURANCE COMPANY, LIMITED,
QUEEN ST. PLACE, LONDON, E.C.

DIRECTORS.

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FRANCIS FLINT BELSEY, Esq., J.P.

ALFRED CONDER, Esq., F.R.I.B.A.

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**WORLD-WIDE
UNCONDITIONAL
POLICIES.**

The Form of Policy adopted by the Company is free from all restrictions as to Foreign Travel and other Conditions.

Whole Life Policies made payable in Lifetime without extra Premium by application of profits.

Example.—Ordinary with profit whole Life Rate:—25 next birthday, **£2 3s.** per cent. per annum; 30 next birthday, **£2 9s.**

Amongst claims recently paid, the Policies taken out at ages 28, 29 and 30, became endowments by means of Bonuses, and matured at ages 65-1/6, 65-2/3, and 65-11/12. This result is better than non-profit Endowment.

IMMEDIATE PAYMENT OF CLAIMS.
LIFE ABSTAINERS' SECTION.

SEPARATE USE POLICIES.
THRIFT ASSURANCE FOR CHILDREN.

ACCUMULATED FUND

PAID IN CLAIMS

... .. **£1,825,412**

... .. **£2,832,537**

JOHN WILKINSON FAIREY, Manager

CLERGY MUTUAL ASSURANCE SOCIETY.

FOUNDED 1829.

Offices: 2 & 3, THE SANCTUARY, WESTMINSTER, S.W.

Patrons—THE ARCHBISHOP OF CANTERBURY President—THE BISHOP OF LONDON. Vice-President—THE LORD HARRIS, THE ARCHBISHOP OF YORK.

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Actuary and Manager—Frank B. Wyatt, Esq., F.I.A.

The Society offers the BENEFITS of MUTUAL LIFE ASSURANCE on highly favourable terms to

THE CLERGY AND THEIR RELATIVES.

The Whole of the PROFITS BELONG TO THE MEMBERS.

Accumulated Fund = £4,147,020 | Annual Income = £400,381
Bonuses Distributed = £3,723,720

The ANNUAL PREMIUMS are LOWER THAN THOSE USUALLY CHARGED.

Under the "REDUCED PREMIUM" system—applicable to Whole-Life and Endowment Assurances—only FOUR-FIFTHS of the Ordinary Annual Premium is payable, the other one-fifth remaining a debt to be repaid out of Bonus.

Notwithstanding the LOWNESS of the Premiums charged, the BONUSES are on an EXCEEDINGLY HIGH SCALE. For the 20 years ending May, 1901, the Bonuses distributed were equal to an average Cash Return of no less than 45 per cent. of the Premiums paid.

The CONDITIONS OF ASSURANCE are most favourable, & SURRENDER VALUES, PAID-UP POLICIES, and LOANS ON DEPOSIT OF POLICIES are all on an exceedingly liberal scale.

IMPORTANT NOTICE.

No Agents employed and no Commission paid for the introduction of business, whereby about £10,000 a year is saved to the Members. Assurances can be readily effected by direct communication with the Office.

Specimens of Rates Charged:—

Age next Birthday.	WITH FULL PROFITS.		UNDER "REDUCED PREMIUM" PLAN.		Age next Birthday.
	Assurance of £100 payable at Death.	Endowment Assurance of £100 payable at Age 60 or earlier Death.	Assurance of £100 payable at Death.	Endowment Assurance of £100 payable at Age 60 or earlier Death.	
20	£ s. d. 1 15 0	£ s. d. 2 6 3	£ s. d. 1 8 0	£ s. d. 1 17 0	20
25	2 0 2	2 14 4	1 12 2	2 3 6	25
30	2 6 4	3 5 1	1 17 1	2 12 1	30
35	2 13 0	4 0 2	2 2 5	3 4 2	35
40	3 2 2	5 2 6	2 9 9	4 2 0	40
45	3 12 4	6 19 3	2 17 11	5 11 5	45
50	4 7 4	..	3 9 11	..	50

NOTE.—The "Reduced" Annual Premium is four-fifths of the Ordinary Annual Premiums, the other one-fifth remaining a debt to be repaid out of Bonus.

CARRIAGE ACCIDENTS, DRIVERS' ACCIDENTS, HORSE INSURANCE.

IMPERIAL ACCIDENT, LIVE STOCK AND GENERAL INSURANCE COMPANY LIMITED.

ESTABLISHED 1878.

Head Offices: 17, PALL MALL EAST, LONDON, S.W.

Horses Insured against Death from Accident and Disease.

Carriages Insured against Damage by Collision, Failing, Bolting or Kicking of the Horses, or being Run into.

Employers insured against Drivers' Accidents to Persons and Property of Third Persons, by Collisions, Carelessness of Drivers, Horses Bolting, Kicking, &c.

CLAIMS PAID EXCEED £250,000.

Prospectus, &c., sent post free on application.

AGENTS REQUIRED.

B. S. ESSEX, MANAGER.

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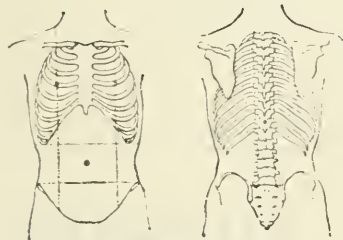
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THE HOSPITAL is in close proximity to Paddington Station (G.W.R.), Marylebone (G.C.R.), Edgware road and Praed street (Met. and Dist.), and Lancaster gate (C.L.R.). The Medical School provides complete preparation for the Degrees of the Universities and other Higher Examinations, the Hospital affords every facility for Clinical Work in all branches of Medicine and Surgery, and in the various Special Departments. A Register of Residences for Students, in the vicinity of the Hospital, is kept in the Office of the Medical School.

The NEW WING, the ground floor of which, comprising the new Out-Patients Department, was opened in 1898, is now in process of completion. This will add to the Hospital 81 new beds, additional Operating Theatres, a Clinical Theatre, Clinical Laboratory, and an X-ray Department.

UNIVERSITY OF LONDON COURSE.

The Medical School, as one of the schools of the University of London, provides complete courses of instruction for the degrees of the University. The Preliminary Scientific Course comprises special classes for both the January and July examinations. Systematic Courses for the Intermed. and Final M.B. Examinations are held throughout the year, with Special Tutorial Classes before each Examination.

ENTRANCE SCHOLARSHIPS IN NATURAL SCIENCE.

One of £145, one of £78 15s., two of £52 10s., and two University Scholarships of £63 each, are awarded annually by Examination in September.

SCHOLARSHIPS AND PRIZES OPEN TO STUDENTS.

Upwards of Thirty Scholarships and Prizes are awarded annually, including the following:—KERSLAKE SCHOLARSHIP IN PATHOLOGY AND BACTERIOLOGY, value £25;

GOLD MEDAL IN CLINICAL MEDICINE (value £20)

THREE GENERAL PROFICIENCY SCHOLARSHIPS of £20 each;

THE MEADOWS PRIZE IN OBSTETRICS (alternate years).

SPECIAL PRIZES IN CLINICAL MEDICINE, CLINICAL SURGERY, OPHTHALMOLOGY, AND DERMATOLOGY.

SPECIAL TUITION.

In addition to systematic Courses of Lectures and Demonstrations, special tuition is provided for the Intermediate and Final M.B. Examinations of the Universities of Oxford, Cambridge, and London without additional fees to Full Students.

CLINICAL APPOINTMENTS.

The numerous Clinical Appointments in the Hospital are free to all Students, each being of four months' duration, and the Resident Medical Officers are appointed by Competitive Examination; of the latter, eighteen are appointed annually.

HOSPITAL STAFF.

Consulting Physicians—Sir Edwd. Sieveking, M.D., LL.D., Sir Wm. Broadbent, Bart. K.C.V.O., M.D., F.R.S.

Consulting Surgeons—Mr. A. T. Norton, Mr. Edmund Owen, Mr. Field (Aural), Mr. Howard Hayward (Dental), Sir Anderson Critchett (Ophthalmic), Mr. Malcolm Morris (Skin).

Physicians—Dr. W. B. Cheadle, Dr. D. B. Lees, Dr. Sidney Phillips. (Out-patients), Dr. R. Maguire, Dr. A. P. Luff. Dr. H. A. Caley

Physicians-Accoucheur—Dr. Montagu Handfield-Jones. (Out-patients), Dr. W. J. Gow

Surgeons—Mr. Herbert W. Page, Mr. A. J. Pepper, Mr. A. Q. Silcock. (Out-patients), Mr. J. Ernest Lane, Mr. H. S. Collier, Mr. V. W. Low

Ophthalmic Surgeon—Mr. H. E. Juler

Assistant Ophthalmic Surgeon—Mr. Leslie Paton

Aural Surgeon—Dr. William Hill

Skin Department—Dr. Graham Little

Throat Department—Dr. Scanes Spicer

Dental Surgeon—Mr. Morton Smaile

Administrator of Anæsthetics—Mr. Henry Davis

LECTURERS.

Clinical Medicine—Dr. Cheadle, Dr. Lees

Clinical Surgery—Mr. Herbert W. Page

Medicine—Dr. Sidney Phillips

Surgery—Mr. A. J. Pepper, Mr. A. Q. Silcock

Practical Surgery—Mr. H. S. Collier, Mr. V. W. Low

Midwifery—Dr. M. Handfield-Jones

Materia Medica—Dr. H. A. Caley

Forensic Medicine—Dr. A. P. Luff

Mental Diseases—Dr. Theo. B. Hyslop

Tropical Diseases—Dr. Anderson

Medical Tutor—Dr. F. J. Poynton

Surgical Tutor—Mr. V. W. Low

Obstetric Tutor—Dr. T. G. Stevens

Medical Registrar—Dr. C. F. Coombs

Hygiene—Dr. W. H. Willcox

Pathology—Professor Wright

Pathological Chemistry—Dr. W. H. Willcox

Bacteriology—Professor Wright

Anatomy—Mr. J. Ernest Lane

Physiology and Histology—Mr. W. L. Symes

(Acting Lecturer)

Chemistry and Physics—Dr. W. H. Willcox, Mr.

E. H. Strange (Assist. Lect.)

Biology—Dr. Ridewood

Surgical Registrar—Mr. W. H. Clayton-Greene

Curator of Museum—Dr. J. F. H. Broadbent

Electrical Department—Dr. W. J. Harris

For Medical School Calendar giving full particulars, apply to the Dean, Dr. H. A. CALEY, or to Mr. B. E. MATTHEWS, School Secretary.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

FOUNDED BY RAHERE, A.D. 1123.

THE Clinical practice of this Hospital comprises a service of 744 Beds, of which 238 are allotted to Medical cases, 336 to Surgical cases, 25 to Diseases of the Eye, 34 to Diseases of Women, 40 to Isolation and General, while 70 are for Convalescent Patients at Swanley, Kent. The Hospital receives within its Wards upwards of 7000 Patients annually, whilst the Out-Patients amount to more than 180,000.

PUPILS' APPOINTMENTS.

Ten House Physicians, each holding office for one year, are appointed by the Physicians. Each House-Physician is provided with rooms by the Hospital authorities. Ten House-Surgeons, each holding office for one year, are appointed by the Surgeons. Each House-Surgeon is provided with rooms by the Hospital authorities. The Midwifery-Assistant holds office for six months, and is appointed by the Physician-Accoucheur. He is provided with rooms by the Hospital authorities. The Ophthalmic House-Surgeon is appointed every six months by the Ophthalmic Surgeons. An Extern Midwifery-Assistant is appointed every three months. All the above officers receive a salary of £80.

Two Resident Assistant Chloroformists are appointed annually; the Senior receiving £120 and the Junior £100. Two Assistant Electricians, with a salary of £25, are appointed every three months.

The In-Patient Dressers, the Clinical Clerks, the Obstetric Clerks, the Clerks to the Out-Patients, the Dressers to the Out-Patients, and the Clerks and Dressers in the Special Departments are chosen from the Students. No fee is paid for any of these appointments.

MEDICAL AND SURGICAL STAFF.

Consulting Physicians—Sir W. S. Church, Bart., K.C.B., Dr. Hensley
Physicians—Dr. Gee, Sir Dyce Duckworth, Dr. Hensley, Sir Lauder Brunton, F.R.S., Dr. Norman Moore, Dr. S. West
Assistant-Physicians—Dr. Ormerod, Dr. Herringham, Dr. Tooth, Dr. Garrod
Consulting Surgeons—Luther Holden, Esq., F.R.S., Sir T. Smith, Bart., Mr. Butlin, Mr. Marsh

Surgeons—Mr. Cripps, Mr. Bruce Clarke, Mr. Bowby
Assistant-Surgeons—Mr. Lockwood, Mr. D'Arcy Power, Mr. Waring, Mr. Eccles
Physician-Accoucheur—Dr. Champneys
Assistant Physician-Accoucheur—Dr. Griffith
Ophthalm. Surgeons—Mr. Jessop, Mr. Holmes Spicer
Dental Surgeons—Mr. Paterson, Mr. Ackery.

THE COLLEGE.

Students attending the Practice of the Hospital, or the Lectures in the Medical School, are admitted to residence in the College within the Hospital walls, subject to the College Regulations.

LECTURERS.

Medicine—Dr. Moore, Dr. West
Surgery—Mr. Bowby, Mr. W. D. Harmer, M.C., Cantab
Descriptive and Surgical Anatomy—Mr. Waring, Mr. Eccles
General Anatomy and Physiology, with Histology—Dr. Edkins
Chemistry & Practical Chemistry—Dr. Chattaway
Midwifery—Dr. Champneys

Physics—Mr. F. Womack
Materia Medica—Dr. Calvert
Botany—Rev. George Henslow
Hygiene—Dr. Hamer
Biology and Comparative Anatomy—Dr. Shore
Pathological Anatomy—Dr. Andrews
Ophthalmic Surgery—Mr. Jessop
Psychological Medicine—Dr. Clay Shaw.

CLINICAL LECTURES are given during the Winter and Summer Sessions.

Clinical Medicine—Dr. Gee, Sir Dyce Duckworth, Dr. Hensley, Sir Lauder Brunton, Dr. N. Moore.
Clinical Surgery—Mr. Langton, Mr. Marsh, Mr. Butlin, Mr. Walsham, Mr. Cripps, Mr. Bruce Clarke
Midwifery and Diseases of Women—Dr. Champneys.

SPECIAL DEPARTMENTS.

Diseases of the Skin—Dr. S. Ormerod
Orthopædic Surgery—Mr. Bruce Clarke
Diseases of the Ear—Mr. Cumberbatch
Dis. of the Eye—Mr. Jessop, Mr. Holmes Spicer
Practical Surgery—Mr. Waring, Mr. Bailey
Practical Anatomy—Mr. Rawling, Mr. Harmer
Assistant Demonstrators—Mr. Murphy, Mr. West
Practical Physiology—Dr. Edkins
Assistant Demonstrators—Dr. Langdon Brown, Mr. Thomas
Operative Surgery—Mr. D. A. Power, Mr. Bailey
Practical Medicine—Dr. Herringham, Dr. Tooth
Junior Demonstrator—Dr. Horder

Practical Midwifery—Mr. Williamson
Surgical Registrar—Mr. Bailey
Medical Registrars—Dr. Fletcher, Dr. Drysdale
Pathology—
Lecturer on Pathology and Pathologist—Dr. F. W. Andrews
Demonstrator of Chemical Pathology—Dr. A. E. Garrod
Demonstr. of Pathology—Dr. Horder, Mr. Gask
Junior Demonstrators—Mr. Bainbridge, Mr. Rose
Morbid Anatomy—Dr. Fletcher, Dr. Drysdale
Surgical Pathology—Mr. D'Arcy Power.

SCHOLARSHIPS AND PRIZES.—Open Scholarships in Science (founded 1873). These Scholarships, four in number, of the value of £150, £75, £75, £50, are tenable for one year. Candidates must be under twenty five years of age for those of £75, and under twenty-one years of age for the others, and must not have entered to the medical or surgical practice of any London medical school. The Jeaffreson Exhibition, of the value of £20, is an open exhibition in Classics, Mathematics, and Modern Languages.—A Shuter Scholarship, £50, in Anatomy, Physiology, and Pharmaceutical Chemistry, at entrance (limited to graduates in arts of Cambridge).—A Senior Scholarship, £50, in Anatomy, Physiology, and Chemistry. Lawrence Scholarship and Gold Medal, of the value of 40 guineas (founded 1873 by the family of the late Sir William Lawrence).—Two Brackenbury Scholarships, each £30, in Medicine and Surgery.—Four Junior Scholarships in the subjects of study of the following subject: "The Life and Works of Sir C. Bell."—The Bentley Prize for the best report of cases occurring in the wards of the hospital during the previous year.—The Kirkes Gold Medal and Scholarship of 30 guineas for Clinical Medicine.—The Hichens Prize for the best examination in "Butler's Analogy."—Foster Prize for the best examination in Practical Anatomy (senior).—The Treasurer's Prize for the best examination in Practical Anatomy (junior).—The Harvey Prize for the best examination in Practical Physiology.

Special Classes are held for the Preliminary Scientific, and for the other Examinations at the Universities of London, Oxford and Cambridge, and the Fellowship of the Royal College of Surgeons (Primary and Final). Students preparing for other Examining Boards are arranged in classes and examined by the Lecturers, Demonstrators, and Assistant Demonstrators.

Fee for Lectures and Hospital Practice, 150 guineas if paid in one sum, or 160 guineas if paid by Instalments. Payment in either of these ways entitles a Student to a Perpetual Ticket.

Address communications: Mr. W. Douglas Harmer, Warden of the College, St. Bartholomew's Hosp.

THE

London Hospital & Medical College,

MILE END, E. One Hundred & Nineteenth Session.

*The Hospital, which is the largest in England, contains 800 Beds.
Total of In-Patients during 1902, 13,160. Out-Patients, 162,147.*

HOSPITAL STAFF.

Consulting Physicians: Dr Hughlings Jackson, F.R.S., Dr. A. E. Sansom, Dr. Herman (Obstetric)

Consulting Surgeons: Jonathan Hutchinson, Esq., LL.D., F.R.S., John Couper, Esq., J. McCarthy, Esq., Sir Frederick Treves, Bart., K.C.V.O., C.B., Warren Tay, Esq.

Consulting Dental Surgeon: Mr. Barrett

Consulting Anæsthetist: Dr. Hewitt

Physicians: Sir Stephen Mackenzie, Dr. Gilbert-Smith, Dr. Francis Warner, Dr. Percy Kidd, Dr. Fredk. J. Smith, Dr. Hadley, Dr. Schorstein

Assistant Physicians: Dr. Bertrand Dawson, Dr. Henry Head, F.R.S., Dr. R. Hutchison, Dr. L. A. Smith

Surgeons: Mr. C. W. Mansell Moullin, Mr. Hurry Fenwick, Mr. F. S. Eve, Mr. J. Hutchinson, junr., Mr. T. H. Openshaw, Mr. H. P. Dean

Assistant Surgeons: Mr. P. Furnivall, Mr. Barnard, Mr. Rigby, Mr. Sherren

Obstetric Physician: Dr. A. H. N. Lewers

Ophthalmic Surgeon: Mr. A. B. Roxburgh
Physician to the Skin Department: Dr. Sequeira

Assistant Physician to the Skin Department:

Aural Surgeon: Mr. Hunter Tod

Medical Officer in charge of the Electrical Department: Dr. E. R. Morton

Medical Officer in charge of the Light Department: Dr. J. H. Sequeira

Bacteriologist to the Hospital: Dr. W. Bulloch

Analyst to the Hospital: Mr. Hugh Caney

Dental Surgeons: Mr. W. H. Dolamore, Mr. F. M. Farmer

Anæsthetists: Dr. Probyn-Williams, Mr. Hilliard, and Mr. Clapham.

LECTURERS.

Medicine: Dr. Percy Kidd, Dr. Fredk. J. Smith. *Clinical Medicine:* The Physicians and Assist. Physicians. *Surgery:* Mr. Mansell Moullin. *Clinical Surgery:* The Surgeons and Assist. Surgeons. *Anatomy:* Mr. T. H. Openshaw. *Physiology and Histology:* Mr. Leonard Hill, F.R.S., Dr. Wall, Dr. Ham. *Chemistry, Practical Chemistry and Physics:* Mr. Page, Mr. Hugh Candy. *Pathology:* Dr. Schorstein, Dr. Bulloch. *Bacteriology and Pathological Chemistry:* Dr. Bulloch. *Midwifery:* Dr. Lewers. *Clinical Obstetrics:* The Obstetric Physicians. *Practical Obstetrics:* Dr. Lewers, Dr. Andrews. *Public Health and Sanitary Science:* Dr. Thresh, Mr. Page, Dr. Bullock. *Toxicology and Medical Jurisprudence:* Dr. Hadley. *Public Health:* Dr. Thresh. *Mental Diseases:* Dr. Kennedy Will. *Materia Medica and Therapeutics:* Dr. Warner, Dr. Dawson. *Experimental Physics:* Mr. Page, Mr. Candy. *Biology:* Mr. Mudge and Mr. Woodland. *Ophthalmic Surgery:* Mr. Roxburgh. *Diseases of the Ear:* Mr. Hunter Tod. *Diseases of the Throat:* Dr. Lack. *Anatomy and Pathology of the Teeth:* Mr. W. H. Dolamore, Mr. F. M. Farmer. *Practical Anatomy:* Mr. Arthur Keith, Mr. Howard, Mr. J. Sherren. *Practical Physiology:* Mr. Leonard Hill, Dr. Wall, Dr. Ham. *Food and Dietetics:* Dr. Hutchison. *Practical Chemistry:* Mr. Page, Mr. Candy. *Operative Surgery:* Mr. Dean. *Morbid Anatomy:* Dr. F. J. Smith, Dr. Hadley, Dr. Dawson, Dr. Lewis Smith. *Bacteriology:* Dr. W. Bulloch, Mr. Twort. *Pathological Histology:* Dr. Bulloch. *Anæsthetics:* Dr. Probyn-Williams. *Emeritus Professors of Surgery:* Mr. Jonathan Hutchison, F.R.S., Sir F. Treves, Bart. *Emeritus Lecturer on Anæsthetics:* Dr. Hewitt. *Medical Tutor:* Dr. Wall. *Surgical Tutor:* Mr. Barnard. *Obstetric Tutor:* Dr. Andrews.

Scholarships and Prizes. (*Entrance Scholarships.*) The Price Scholarship in Science value £120; the Price Entrance Scholarship in Physiology and Anatomy, value £60, open only to students of the Universities of Cambridge and Oxford; two Science Scholarships, value £60 and £35; the Epsom Scholarship, value £126; and two Buxton Scholarships, value £30 and £20. A Scholarship in Human Anatomy and Biology, value £20. A Scholarship in Anatomy and Physiology, value £25. The Letherby Prizes, value £30, for proficiency in Chemistry. A Hospital Scholarship in Clinical Medicine, value £20. A Hospital Scholarship in Clinical Surgery, value £20. A Hospital Scholarship in Clinical Obstetrics, value £20. The Sutton Prize in Pathology, value £20. The Duckworth-Nelson Prize in Elementary Clinical Medicine, value £10; in Practical Medicine and Surgery (biennial), The Hutchison Prize, value £35, triennial, to the author of the best essay upon a Subject in Clinical Surgery. The Sir Andrew Clark Prize in Clinical Medicine and Pathology, value £26. The Anderson Prize in Elementary Clinical Medicine, value £9. Prizes to the value of £60 to the Dressers of Out-Patients, Practical Anatomy Prizes, value £6 and £4.

Appointments. Receiving Room Officers, Resident Accoucheurs, House Physicians, House Surgeon, etc. More than seventy qualified appointments, salaried or resident, are made annually, and numerous Dressers, Clinical Clerks, etc., are appointed quarterly, all without extra fee, and with Free Board for residents.

A reduction of 15 guineas is allowed to sons of members of the Profession.

The new Pathological Institute and new Laboratories for Bacteriology, Public Health, Physiology, Histology, Embryology, etc., and the new Club's Union Room, are now open and in full use.

For further information apply, personally or by letter, to

MUNRO SCOTT, Warden.

The Middlesex Hospital Medical School.

Hospital Staff and Lecturers.—Consulting Physicians: Dr. Cayley, Dr. Coupland, Sir R. D. Powell, Bart., M.D. Physicians: Dr. Fowler, Dr. Pasteur, Dr. W. E. Wynter. Obstetric Physician: Dr. W. Duncan. Physician to Out-Patients: Dr. A. F. Voelcker. Assistant Physicians: Dr. Wethered, Dr. Thomson, Dr. Young. Consulting Physician to Skin Department: Dr. Robert Liveing. Physician to Skin Department: Dr. Pringle. Assist. Obstetric Physician: Dr. Comyns Berkeley. Consulting Surgeon: Mr. Nunn. Surgeons: Mr. Henry Morris, Mr. Andrew Clark, and Mr. Pearce Gould. Surgeons to Out-Patients: Mr. J. Bland-Sutton, and Mr. J. Murray. Assistant Surgeon: Mr. T. H. Kellock. Ophthalmic Surgeon: Mr. Wm. Lang. Aural Surgeon: Mr. Stephen Paget. Consulting Dental Surg.: Mr. Turner. Dental Surg.: Mr. Wm. Hern. Assist. Dental Surgeon: Mr. W. S. Nowell. Other Lecturers: Dr. Mickle, Dr. Kellas, Dr. Thompson, Dr. Crombie, Mr. Foulerton, Mr. Goodall.

SIXTEEN RESIDENT CLINICAL APPOINTMENTS are open to students annually. ALL CLERKSHIPS and DRESSERSHIPS are awarded without fee.

TWO BRODERIP SCHOLARSHIPS, of the value of £40 and £60 respectively, are awarded every year for efficiency in Clinical Knowledge.

THE MURRAY SCHOLARSHIP, founded in connection with the University of Aberdeen, is awarded every third year to a Student of the Middlesex Hospital. Next award in 1904.

The following are awarded annually:—

THE GOVERNORS' PRIZE of £21 (Clinical Work in Out-Patient Dept.).

THE HETLEY PRIZE, value £25 (Clinical Medicine, Surgery & Obstetrics).

THE LYELL MEDAL, value £5 5s. (Surgical Anatomy & Practical Surgery).

THE LEOPOLD HUDSON PRIZE, value £11 11s. (Surgical Pathology and Bacteriology).

THE FREEMAN SCHOLARSHIP, value £30 (Obstet. Med. & Gynæcology).

PRIZES.—A Prize in Elementary Anatomy and Biology, value £5 5s., will be given to the Student who, at the end of his first Winter Session, shall pass the best written and practical examinations.

An Exhibition of the value of £10 10s. will be given at the end of his second Winter Session to the Student who shall pass the best written and practical examination in Anatomy and Physiology.

Middlesex Hospital Entrance Scholarships.—Entrance Scholarships in Classics, Mathematics, and Natural Science are offered for competition at the commencement of the Winter Session. Full particulars may be obtained on application to the Dean. Successful candidates are required to become general students of the School.

SCHOLARSHIPS IN ANATOMY AND PHYSIOLOGY.—An Annual Scholarship of the value of £60 is open to Students of the Universities of Oxford and Cambridge who have already passed or completed the curriculum for the professional examinations in Anatomy and Physiology. *Subjects:* Anatomy and Physiology, including Histology. Examination to take place at the end of September.

THE TUTORS assist all Students, especially those who are preparing for examination, without extra fee; the necessity for obtaining private instruction is thus obviated.

MEDICAL, OBSTETRICAL, and SURGICAL REGISTRAR, RESIDENT MEDICAL OFFICER, DEMONSTRATORS OF ANATOMY.—These valuable appointments are open to qualified men as they become vacant.

For further information apply to J. MURRAY, Dean.

UNIVERSITY OF BIRMINGHAM

Principal—Sir OLIVER J. LODGE, Kt., D.Sc., F.R.S.

FACULTY OF MEDICINE

(INCLUDING THE BIRMINGHAM DENTAL SCHOOL.)

Dean—Prof. B. C. A. WINDLE, M.Sc., M.A., M.D., D.Sc., F.R.S.

PROFESSORS.

Medicine—Professors R. Saundby, M.D. (Edin.), F.R.C.P., LL. D., and A. H. Carter, M.D., F.R.C.P. *Surgery*—Professors Bennett May, M.B. (Lond.), F.R.C.S., and Gilbert Ba'ling, M.B., B.S., F.R.C.S. *Anatomy*—Professor B. C. A. Windle, M.A., M.D., D.Sc., B.Ch. (Dub.), F.R.S. *Physiology*—Professor E. W. Wac- Carlier, M.D., F.R.S. (Edin.). *Chemistry*—Professor Percy F. Frankland Ph.D., M.Sc., F.R.S. *Physics*—Professor J. H. Poynting, D.Sc. (Cantab.), F.R.S. *Comparative Anatomy*—Professor T. W. Bridge, D.Sc. (Cantab.), F.R.S. *Therapeutics*—Professor A. Foxwell, M.A., M.D., F.R.C.P. *Forensic Medicine*—Professor J. T. J. Morrison, F.R.C.S. *Hygiene and Public Health*—Professor Bostock Hill, M.D., D.P.H. *Midwifery*—Professor Edward Malins, M.D., F.R.C.P. *Gynaecology*—Professor J. W. Taylor, M.D., F.R.C.S. *Pathology and Bacteriology*—Professor R. F. C. Leith, M.B., F.R.C.P. (Edin.). *Lunacy and Mental Disease*—Professor E. B. Whitcombe, M.B., Ch.B., M.R.C.S. *Operative Surgery*—Prof. Jordan Lloyd, M.B., M.S. (Durh.), F.R.C.S. *Ophthalmology*—Prof. Priestly Smith, M.B., Ch.B., F.R.C.S.

LECTURERS.

Toxicology—Bostock Hill, M.D. D.P.H. *Osteology*—W. Wright, M.B., Ch.B. F.R.C.S. *Applied Anatomy*—W. F. Haslam, F.R.C.S. *Bacteriology*—C. Leedham Green, M.D., F.R.C.S., and James Miller, B.Sc., M.B., Ch.B. *Materia Medica*—J. Coole Kneale, L.R.C.P., L.R.C.S. (Edin.). *Comparative Anatomy*—W. E. Collinge, B.Sc. F.Z.S. *Assistant to Chair of Medicine*—J. W. Russell, M.A., M.D., M.R.C.P. *Assistant to Chair of Surgery*—G. Heaton, M.B., F.R.C.S. *Assistant to Chairs of Midwifery and Gynaecology*—C. E. Purslow, M.D. *Assistant to Chair of Therapeutics*—W. A. Potts, B.A., M.D., C.M. *Assistant to Chairs of Forensic Medicine and Public Health*—R. A. Lyster, B.Sc., M.B., Ch.B. D.P.H. *Physics*—G. A. Shakespear, B.Sc. *Chemistry*—A. McKenzie, M.A., D.Sc., Ph.D.

DEMONSTRATORS.

Anatomy—Messrs W. Wright, M.B., F.R.C.S., W. E. Bennett, F.R.C.S., J. Jameson Evans, M.B., F.R.C.S., and Miss V. Coghill, M.B. *Physiology*—J. H. Rhodes, M.B., M.R.C.S. *Chemistry*—Dr. A. Findlay and T. S. Moore, B.Sc. *Surgical Pathology*—Dr. Douglas Stanley. *Practical Pharmacy*—F. R. Greenwood, M.D. *Physics*—G. Barlow, B.A.

The Courses are specially arranged for the Degrees of the University, but qualify also for the Degrees of other Universities, and for the Diplomas of Licensing Bodies.

There are various Scholarships, entrance and otherwise, full particulars of which will be found in the Calendar published by Messrs. Cornish, New Street, price 2s., by post 2s. 4d.

CLINICAL INSTRUCTION is given at the General and the Queen's Hospitals, which have a united total of over 400 beds. There are special departments for Eye, Skin, Ear and Throat, and Female Diseases. Students can also attend the City Lunatic Asylum, the City Fever Hospital, the Eye, Ear and Throat, and the Orthopædic Hospitals.

BIRMINGHAM DENTAL SCHOOL.

LECTURERS.

Dental Surgery—F. E. Huxley, M.R.C.S., L.D.S., M.D.S. *Dental Anatomy and Physiology*—J. Humphreys, L.D.S.I., M.D.S., F.L.S. (Hon. Sec. of School). *Dental Mechanics*—A. E. Donagan, M.A., L.D.S. *Dental Histology and Pathology*—Dencer Whittles, L.D.S., B.D.S. *Dental Metallurgy*—T. Turner, M.Sc. *Practical Dental Surgery*—W. T. Madin, L.D.S. *Medical Diseases of Mouth, &c.*—T. Stacey Wilson, M.D., M.R.C.P. *Surgical Diseases of Mouth, &c.*—F. Marsh, F.R.C.S.

The Dental School, in conjunction with the General, Queen's, and Dental Hospitals, affords a complete curriculum for the Dental Degrees of the University, and for all Dental Diplomas. There is an Entrance Scholarship of the value of £37 ros. offered annually. For further information apply to the Hon. Sec., 149, Edmund Street.

There are also Faculties of Science, Arts, and Commerce, and a School of Brewing. Syllabuses containing full particulars are published separately.

All Courses and Degrees in the University are open to students of both sexes.

Further information respecting the Medical Faculty can be obtained from the Dean.

GEORGE H. MORLEY, Secretary.

Glasgow Royal Infirmary.

THE WINTER SESSION opened on October 15th, 1903. Number of Beds, including the Ophthalmic Department, is 618.

Special Wards and Beds are set apart for the treatment of Diseases of Women, of the Throat and Nose, and of the Ear. Advice is given at the Dispensary on Diseases of the Skin and of the Teeth, and there is a special department for the treatment of Diseases and Injuries of the Eye. Women Students are admitted to the Clinical Teaching and Practice of the Infirmary. Medical and Surgical Wards being set apart for their exclusive use. A Pavilion for the treatment and diagnosis of diseases by Electricity has just been added.

Physicians—Dr. M'VAIL, Dr. MIDDLETON, Dr. LINDSAY STEVEN, Dr. MONRO, and Dr. ALLAN.

Surgeons—Mr. CLARK, Mr. KNOX, Mr. BARLOW, Mr. ADAMS, Mr. NEWMAN, Mr. Q. M'LENNAN, and Mr. PRINGLE.

Gynaecologist—Dr. J. K. KELLY.

Diseases of the Ear—Dr. KERR LOVE.

Surgeon for Diseases of Throat and Nose—Dr. JOHN MACINTYRE.

Assistant Physicians—Dr. SCOTT, Dr. HUNTER, Dr. ANDERSON, Dr. FINDLAY, Dr. McCROBBIE, Dr. McLAREN.

Extra Assistant Physicians—Dr. MACNAIR, Dr. HENDERSON, Dr. C. S. MARSHALL.

Assistant Surgeons—Mr. DEWAR, Mr. RUTHERFURD, Mr. M'GREGOR, Mr. LUKE Mr. PATERSON, Mr. PATRICK.

Extra Assistant Surgeons—Mr. FAULDS, Mr. MACEWEN, Mr. KAY.

Special Advice is given to Out-Patients on—

Diseases of the Ear, by Dr. KERR LOVE.

Diseases of the Throat and Nose, by Dr. FULLERTON.

Diseases of the Eye, by Dr. ROWAN and Dr. THOMSON.

Diseases of the Skin, by Dr. ALEX. MORTON.

Diseases of Women, by Dr. BALFOUR MARSHALL.

Diseases of the Teeth, by Mr. HOWARD GRAY.

Honorary Consulting Dental Surgeon—Dr. J. C. WOODBURN.

Consulting Electrician—Dr. JOHN MACINTYRE.

Medical Electrician—Dr. JAMES R. RIDDELL.

Assistant Medical Electrician—Dr. S. CAPIE.

Vaccinator—Dr. H. H. BORLAND.

OPHTHALMIC DEPARTMENT.

Surgeon—Dr. MAITLAND RAMSAY.

Assistant Surgeon—Dr. ROWAN.

Junior Assistant Surgeon and Pathologist—Dr. H. WALKER.

Junior Assistant Surgeon—Dr. H. W. THOMSON.

Junior Assistant Surgeon and Electrician—Dr. GILCHRIST.

House Appointments—The House Physicians and House Surgeons are elected every six months. An Assistant to the Gynaecologist, who boards, but is non-resident, is elected at the same time.

Dressers, Clinical Clerks, and Assistants to the Pathologist are selected from the Students.

Bursaries—The David Foulis Scholarship and the John Reid Prize, value £25 each, are open to Students of the Royal Infirmary.

Fees, which include Hospital Practice and the Clinical Lectures—For one year, £10 10s.; six months, £6 6s.; three months, £4 4s. The total fee is £21. Vaccination, £1 1s. Pathology, £4 4s. Bacteriology, £2 2s.

Two-thirds of the hospital fees and the full fees for Vaccination, Pathology, and Bacteriology are paid by the Carnegie Trust for those Students who fulfil the conditions of the Trust. For further information apply to

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UNIVERSITY of EDINBURGH.

SESSION 1903-1904.

Principal—SIR WILLIAM TURNER, K.C.B., D.C.L., LL.D., M.B., &c.

The **Winter Session** opens on 13th October (Practical Anatomy, 1st October), and closes on 18th March; the **Summer Session** opens on 1st May and closes about the middle of July.

FACULTY OF MEDICINE.

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The Faculty embraces fourteen Chairs and thirteen Lectureships; and attached to these Chairs there are about thirty Assistants and Demonstrators. Instruction is given in all the main branches of Medical Science, viz.:—

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Zoology—J. Cossar Ewart, M.D. [LL.D.]
Botany—Isaac Bayley Balfour, M.D., D.Sc.
Physics—J. G. MacGregor, D.Sc., LL.D.
Anatomy—D. J. Cunningham, M.D., D.Sc.,
Physiology—E. A. Schafer, LL.D. [LL.D.]
Materia Medica—Sir Thomas R. Fraser,
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Pathology—William S. Greenfield, M.D.
Forensic Medicine—Sir Henry D. Littlejohn,
 M.D., LL.D.

Public Health—C. Hunter Stewart, M.B.,
 D.Sc.
Medicine—John Wyllie, M.D., LL.D.
Surgery—John Chiene, C.B., M.D.
Midwifery—Alex. Russell Simpson, M.D.,
 D.Sc.
Clinical Surgery—Thomas Annandale, M.D.
Clinical Medicine—Sir Thomas R. Fraser,
 M.D., Wm. S. Greenfield, M.D., John
 Wyllie, M.D., A. R. Simpson, M.D., D.Sc.
 (on Diseases of Women).

UNIVERSITY

Mental Diseases—T. S. Clouston, M.D.
Diseases of the Eye—G. A. Berry, M.B.
Clinical Instruction on Diseases of Children
 —Staff of Royal Hospital for Sick Children.
Embryology and Vertebrate Zoology—J.
 Beard, D.Sc.
Regional Anatomy—D. Hepburn, M.D.
Histology—P. T. Herring, M.D.
Physiological Chemistry—J. Malcolm, M.D.
Exper. Physiology—Sutherland Simpson,
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 M.B., B.Sc.
Pathological Bacteriology—James Martin
 Beattie, M.B., C.M.
Physics—C. G. Knott, M.A., D.Sc.
Diseases of the Larynx, Ear, and Nose—R.
 McKenzie Johnston, M.D., C.M.
Tropical Diseases—A. Davidson, M.D.
Diseases of the Skin—W. Allan Jamieson,
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Practical Instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs, and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Fever Hospital, and the Asylum for the Insane. Upwards of 1800 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.); and Diplomas in Special Branches of Medical and Surgical Practice may also be conferred on Graduates in Medicine and Surgery of the University. The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12) amount to about £115, and the Matriculation and Examination Fees to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s. by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,600, and that of the other Bursaries, etc., tenable by Students of Medicine, amounts to about £1,820.

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Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Dean of the Faculty of Medicine; and for Degrees in the Faculties of Arts, Science, Divinity, Law, and Music from the Deans of these Faculties; or from the Clerk of Senatus; and full details are given in the University Calendar, published by James Thin, 55, South Bridge.

The Preliminary and Degree Examination Papers in each of the Faculties are also published by Mr. James Thin, viz., Arts and Science Preliminary Papers, and Bursary Papers, 1s.; Medical Preliminary Papers, 6d.; Degree Papers—Arts, 1s.; Science, 9d.; Divinity, Law, Medicine, and Music, 6d. each.

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Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree of M.D. after examination only.

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A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

The Extra Arts Examination must be passed previously to the candidate's entry for his Final Examination for the Degree.

All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, which may be obtained from the Secretary at the College.

Scholarships, &c.—A University of Durham Scholarship, value £100, for proficiency in Arts awarded annually to full Students in their first year only. The Dickinson Scholarship—value, the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery, and Pathology. The Tulloch Scholarship—value, the interest of £400—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—interest on £680—for Comparative Pathology. The Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value, the interest of £225—for Midwifery and Diseases of Women and Children. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books is awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Infirmary contains 280 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers, by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying-in Hospital, where there is an Out-door Practice of about 500 cases annually.

FEEES.

- (a) A composition Ticket for Lectures at the College may be obtained—

I.—By payment of 72 guineas on entrance.

II.—By payment of 46 guineas at the commencement of the First Year, and 36 guineas at the commencement of the Second Year.

III.—By three annual instalments of 36, 31, and 20 guineas respectively, at the commencement of the Sessional year.

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" 6 " " " " " " " " " " " "	"	"	£8	8	0
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Or by three instalments at the commencement of the Sessional year—viz., First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments—viz., First year, 14 guineas; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

- (c) Single courses of Lecture, 5 guineas.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to the House-Physician at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

University College, BRISTOL.

FACULTY OF MEDICINE.

THIS COLLEGE is the only Institution in the West of England which provides a complete Medical Curriculum.

The lectures and instruction given in the Faculty of Arts and Science of University College, Bristol, are adapted to the Matriculation Examination of the University of London, and to the Preliminary Examination of the College of Preceptors, and also to the Preliminary Scientific Examination of the University of London; and Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London, the Diplomas of the Royal College of Physicians of London and the Royal College of Surgeons of England, and of the Apothecaries' Society of London, and for the Examinations of the Army and Navy Boards.

A complete Dental Curriculum is also provided.

It is now arranged that Students of the College shall be admitted to the clinical practice of the Bristol Royal Infirmary and the Bristol General Hospital conjointly, and consequently both these institutions are open to all Students.

The Infirmary and the Hospital comprise between them a total of 470 beds; and both have very extensive Out-patient Departments, Special Departments for the Diseases of Women and Children, and of the Eye, Ear, and Throat, besides large Out-door Maternity Departments, and Dental Departments.

Students of the College also have the privilege of attending the practice of the Bristol Royal Hospital for Sick Children and Women, containing 104 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for Clinical Instruction is therefore 614.

Fever Hospital Practice is attended at the Hospitals for Infectious Diseases, of the Sanitary Authority of the Corporation of Bristol; and Lunatic Asylum Demonstrations at the City and County Lunatic Asylum, Fishponds.

Very exceptional facilities are thus afforded Students for obtaining a wide and thorough acquaintance with all branches of Medical and Surgical work. Each Student has the opportunity of personally studying a large number of cases, and of acquiring practical skill in diagnosis and treatment.

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*Ophthalmology and Otology—*H. Secker Walker, F.R.C.S.
*Mental Diseases—*W. Bevan Lewis, L.R.C.P. M.R.C.S.
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*Physiology—*R. VEITCH CLARK, M.A., B.Sc., M.B., Ch.B. Edin.
*Pathology and Bacteriology—*S. G. SCOTT, M.A., M.B., B.Ch. Oxon., J. A. C. FORSYTH, B.Sc., M.B., Ch.B. Vict.
*Hon. Dem. Surgical Pathology—*R. L. KNAGGS, M.A., C.M. Cantab., F.R.C.S.

*Midwifery—*E. O. CROFT, M.D. Durh., M.R.C.S.
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The instructions given in the Department of Medicine prepares for all the medical qualifications of the United Kingdom. The present spacious buildings were erected nine years ago in close proximity to the Leeds General Infirmary. Students receive the whole of their Scientific and Medical education in the College. The composition fee for the course of classes is 64 guineas (not including the preliminary scientific classes); and for classes subsequent to passing a second professional examination, 41 guineas.

For clinical instruction students have access to the General Infirmary (440 beds), the Leeds Public Dispensary, the Hospital for Women and Children, and the West Riding Asylum. A large number of salaried and non-salaried appointments are open to students at the General Infirmary.

The composition fee for Hospital Practice is 40 guineas; for shorter periods, consult the College Calendar.

Special Courses are held for those preparing for Diplomas in Public Health.

Further information respecting classes can be obtained from the Dean of the Department, and for Hospital work from the Secretary of the Leeds General Infirmary.

A list of the Scholarships, Prizes, etc., will be found in the College Calendar, or the Prospectus will be sent on application to the Dean.

UNIVERSITY OF ABERDEEN (Founded 1494.)

FACULTY OF MEDICINE.

THE Degrees in Medicine granted by the University are—Bachelor of Medicine, Bachelor of Surgery, Doctor of Medicine, and Master of Surgery. They are conferred only after Examination, and only on Students of the University. Women are now admitted to instruction and graduation on the same footing as men. A Diploma in Public Health is conferred after Examination on Graduates in Medicine of any University of the United Kingdom.

The Faculty of Medicine embraces twelve chairs, from which instruction is given in all the main branches of Medical Science.

Practical Classes in connection with these chairs are conducted by the Professors and Assistants in Laboratories furnished with all the necessary appliances; and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Instruction is also given in special departments of Medical Practice by Lecturers appointed by the University Court.

Clinical Instruction is obtained in the Royal Infirmary, Royal Lunatic Asylum, the Sick Children's Hospital, the City (Fever) Hospital, the General Dispensary, and Lying-in and Vaccine Institutions and the Ophthalmic Institution.

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The cost of Matriculation, Class and Hospital Fees for the whole curriculum, inclusive of the fees for the Degrees, is usually about £150.

A Prospectus of the classes, fees, &c., may be had on application to the Secretary of the Faculty of Medicine.

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THE UNIVERSITY OF LIVERPOOL.

WINTER SESSION, 1903-4.

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Joseph O'Carroll, M.D., Examiner in Medicine, Royal University.

J. B. Coleman, C.M.G., M.D., Examiner in Medicine, Conjoint Board.

SURGEONS—Sir William Thomson, C.B., F.R.C.S.; Surgeon to the King, and late Surgeon to the Lord Lieutenant in Ireland; Examiner in Surgery, Army Med. Dep.

Sir Thornley Stoker, Ex-President R.C.S.; Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics.

Sir Thomas Myles, M.D., F.R.C.S., late President Royal College of Surgeons.

OPHTHALMIC SURGEON—Robt. D. Joyce, M.R.C.S.E., L.R.C.P. Lond.

THROAT SURGEON—Robert H. Woods, F.R.C.S.; Mem. Council, R.C.S.

GYNÆCOLOGIST—T. Henry Wilson, Examiner in Midwifery, Conjoint Board.

Apply to Sir W. THOMSON, C.B., F.R.C.S., Treasurer, 54, St. Stephen's Green, E.; or to Dr. J. O'Carroll, 43, Merrion Square, East, Dublin.

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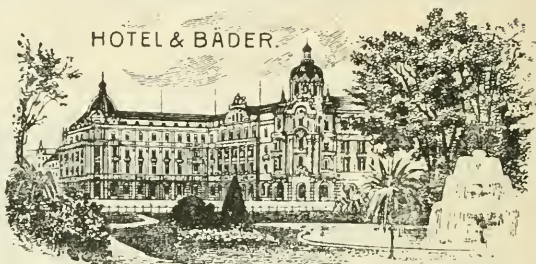
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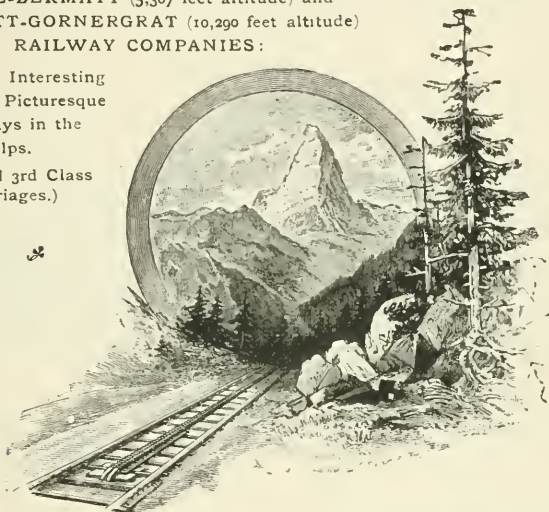
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Arranged and furnished with all the most approved appliances for the treatment, comfort and amusement of the inmates. Within two miles of the Railway Station, and easily accessible by Rail from London and all parts of the kingdom. It is beautifully situated at the foot of the Cotswold Hills, and stands in its own grounds of 250 acres. *For terms, etc., apply to—*

JAS. GREIG SOUTAR, M.B., C.M., *Resident Superintendent.*

THE GRANGE, near ROTHERHAM, A SANATORIUM OF THE HIGHEST CLASS FOR THE CARE & CURE OF MENTAL INVALIDS (LADIES).

Consulting Physician: CROCHLEY CLAPHAM, M.D., F.R.C.P.E.
Resident Physician: G. E. MOULD, M.R.C.S. Eng., L.R.C.P. Lond.,
Physician for Mental Diseases to the Sheffield Royal Hospital.

THE House is a spacious Family Mansion, with extensive pleasure grounds, including good Croquet and Tennis Grounds, and an immense Park, containing Private Drives and Walks of several miles in extent. It is situated in the heart of the famous Robin Hood Country (5 miles from Sheffield, 4 from Rotherham), and is surrounded by beautiful scenery, and an atmosphere free from smoke and impurity. Situation dry and healthy. The arrangements are of a domestic character. The Proprietors welcome visits from the usual Medical Attendant of the Patient during her residence. Under the New Act Voluntary Patients can be received, without Certificates, on own personal application. The Rev. R. T. C. SLADE, Mus. Bac., Vicar of Thorpe-Hesley, acts as Chaplain, and conducts regular Services.

The Resident Physician may be seen at the Grange; or at Leavvgreave House, Hounsfield Road, Sheffield, by appointment. Nat. Tel. (No. 34, Rotherham.)

GRANGE LANE STATION (M.S. & L. Railway) is within a $\frac{1}{4}$ of a mile of The Grange, and may be reached via Sheffield or Barnsley direct; or via Rotherham, changing at Tinsley.

FOR TERMS, FORMS, &C., APPLY TO THE RESIDENT PHYSICIAN.

ASHWOOD HOUSE, KINGSWINFORD, STAFFORDSHIRE.

An old-established and modernised Institution for the Medical Treatment of Ladies and Gentlemen mentally afflicted.

THE House, pleasantly situated, stands in picturesque grounds of forty acres in extent, with a surrounding country noted for the beauty of its walks and drives. The climate is genial and bracing. Occupation, in-door and out-door amusements, and carriage and other exercise amply provided.

Terms range from 3 to 7 guineas per week, inclusive, according to requirements as to accommodation, special attendance, etc.

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For further particulars apply to the MEDICAL SUPERINTENDENT

Northumberland House, GREEN LANES, FINSBURY PARK, N.

ESTABLISHED 1814.

An INSTITUTION for the Care and Treatment of the MENTALLY
AFFLICTED of the UPPER and MIDDLE CLASSES.

Four miles from Charing Cross; easy of access from all parts; a quarter of an hour's walk from Finsbury Park Station (G.N.R.), from which Trams pass the gates.

Six acres of ground, highly situated, facing Finsbury Park

Private Villas, in suites of rooms.

TERMS, from 2 Guineas upwards, according to accommodation provided.

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Telegrams: "TURNER, FAIRFORD."

ESTABLISHED 1822.

HOME LIFE FOR LADIES AND GENTLEMEN
MENTALLY AFFLICTED.

FAIRFORD is three hours by rail from London on the S.W.R., and one from the University of Oxford. THE RETREAT is pleasantly situated in extensive grounds on the banks of the Colne, a part of which celebrated Trout Stream flows through the Estate. The neighbourhood abounds in pleasant walks, and the district, being on a dry oolitic soil, is remarkably healthy.

Apply to Dr. A. C. KING-TURNER, *Proprietor.*

Incorporated by



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Chairman—The Rt. Hon. The Earl of Mansfield.

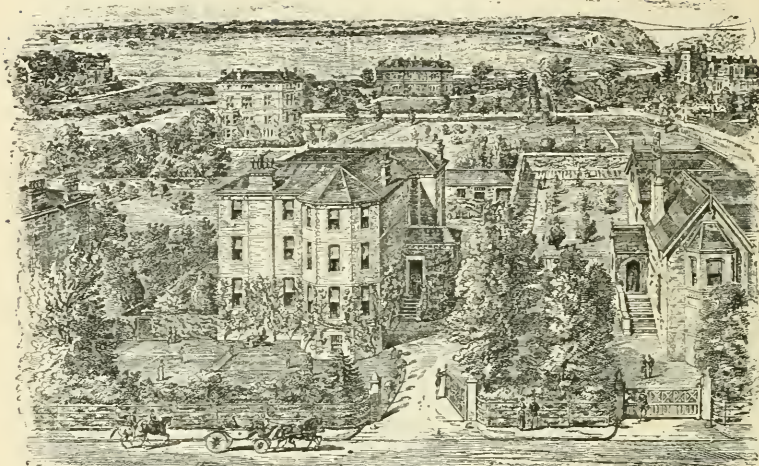
This Asylum, for private patients only, is beautifully situated in the immediate vicinity of Perth, in the midst of extensive Pleasure Grounds, which are surrounded by the fields of the Home Farm.

The Main Building has been modernised and enlarged by the addition of *two wings* for the reception of acute cases, so as to render it an efficient *Hospital* as well as a comfortable *Home*.

The Mansion-House of *Kincarrathie, Seven Gables, Elie* and several *Cottages* are available for the use of patients. The Institution having been enlarged by the erection of Two Villas, there are now vacancies for all classes of private patients.

National Telephone Company: No. 104, Perth.

Postal and Telegraphic Address: Dr. Urquhart, Perth.



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Established A.D. 1876. Only Voluntary cases, and none but Gentlefolk, received. Sneyd Park, on the Bristol Channel side of "The Downs" (a common of 430 acres separating it from Clifton proper) is restricted to private residences. *There is not within a mile of Dunmurry (which is 250 feet above sea level) a single place where any drug or alcoholic drink can be purchased.* No alcoholic beverage is ever kept in the house or allowed into it under any circumstances. Dr. and Mrs. STEWART receive as *voluntary* boarders three ladies and three gentlemen of good social position, sufferers from the disease of Inebriety. All live *en famille*. Dr. S. accompanies the gentlemen *himself* on all walks, drives, etc., Mrs. S. and daughters accompanying the ladies. No hireling attendants employed. No "nervous" cases received. Charges from four guineas upwards weekly.

Postal Address, as above. Telegraphic Address: "DUNMURRY, ROCKLEAZE, BRISTOL."

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Pleasantly situated in its own well-wooded Grounds of three acres, and convenient to tram and train. Licensed under the Inebriates' Acts. Receiving 25 Patients.
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PRIVATE HOME FOR LADIES.

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Thirty years' experience. Excellent Medical references.

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Inebriety and Narcomania.



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**For the Treatment of GENTLEMEN suffering from the
Alcoholic and Morphine Habits, and Narcomania
from such Drugs as Cocaine and Chloral.**

THE RETREAT possesses many unique advantages. It is in an isolated part of the country where there is freedom from temptation. It is most beautifully situated in the Garden of Fife, with lovely views of the German Ocean. The grounds are very extensive, there being 130 acres for recreation, and 800 acres of low ground shooting; a stream flows through and a lake is situated in the grounds in which there is trout fishing. The air is very bracing, and is specially suitable for those whose nervous system requires bracing up.

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HAMPSTEAD, GLASNEVIN, for Gentlemen.

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41, GRAFTON STREET, DUBLIN,

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Apply THE MANAGER, Weir Hall, Upper Edmonton. $1\frac{1}{2}$ miles from Palmers Green Station, G.N.R. 1 mile from Silver Street, G.E.R.

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THREE CLASSES. MOST ENCOURAGING RESULTS.

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High Shot House,**ST. MARGARETS, TWICKENHAM, MIDDLESEX.**

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DINAS MAWDDWY, MERIONETHSHIRE, WALES.

LICENSED UNDER THE INEBRIATES ACTS, 1879-88

Resident Proprietor and Licensee: Dr. W. F. WALKER, J.P.

THE HOME is devoted to the care and cure of gentlemen of the upper classes only, suffering from Inebriety, Neuritis, Nervous Debility, Neurasthenia, and the abuse of Drugs.

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PRIVATE HOME for a few Patients of good social position, who are received as Members of the family, either privately or under the Inebriates' Act.

THE HOUSE is situated in a beautiful and very healthy locality, and stands in its grounds, with large Garden, Tennis Lawn, Billiard Table, Smoking Room, etc. Golf Links within two miles. Good Fishing, Shooting, Hunting, Hawking, to be had in the neighbourhood.

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Has been opened for the purpose of affording facilities for the

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BY THE

INTENSITY SYSTEM.

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TERMS .. 2 TO 4 GUINEAS WEEKLY.

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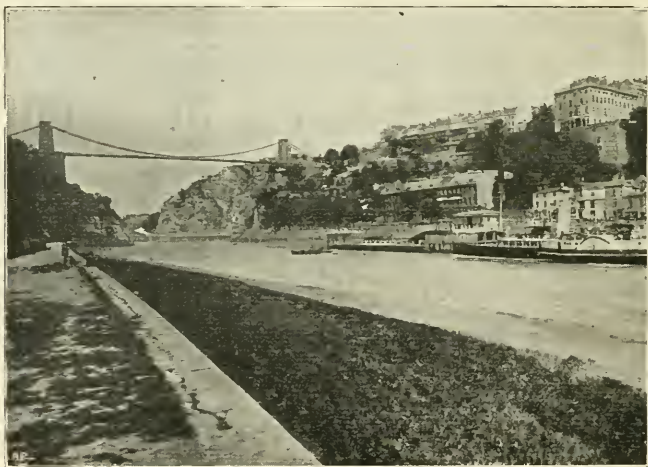
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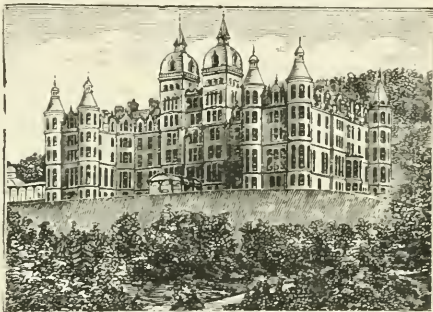
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Radiant Heat and Light Treatment

For Rheumatism, Gout, Arthritis, Lumbago, Sciatica, Sprain.

Stiff and Painful Joints, and many Disorders of the Digestive Organs.

The Dowsing Radiant Heat and Light Treatment is a new and successful method of applying Light and Heat Rays of great intensity to the limbs and parts of the body.

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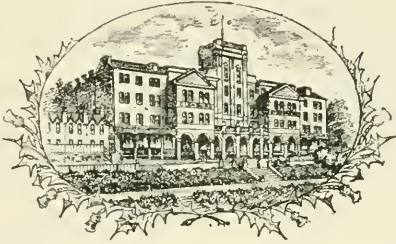
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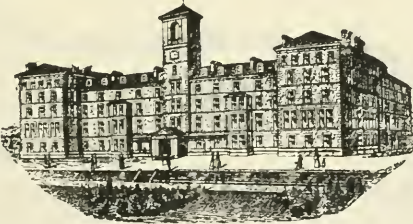
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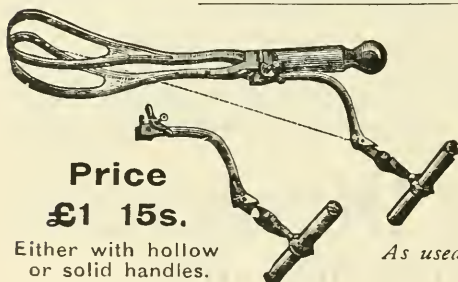
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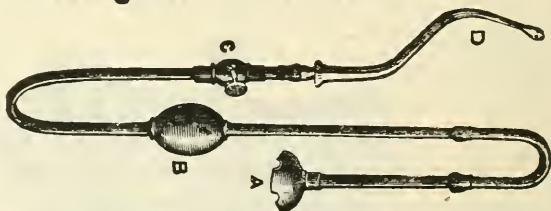
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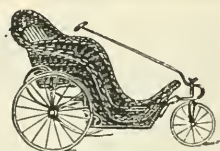
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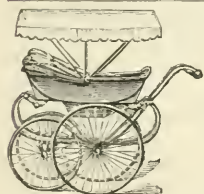


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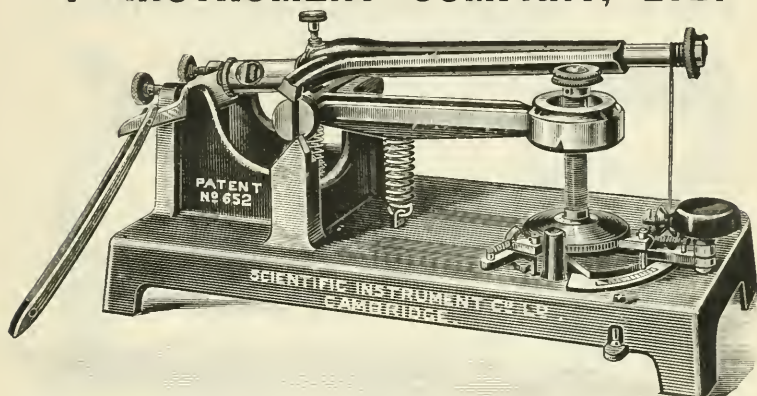
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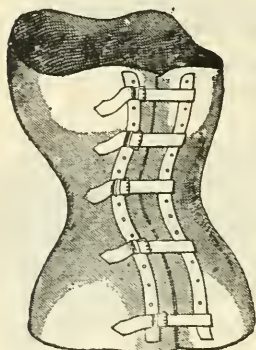
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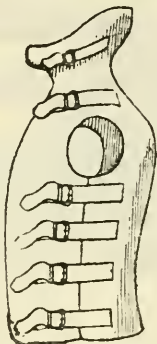
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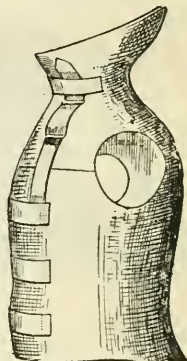


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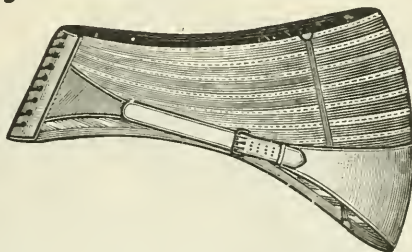
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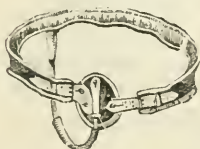
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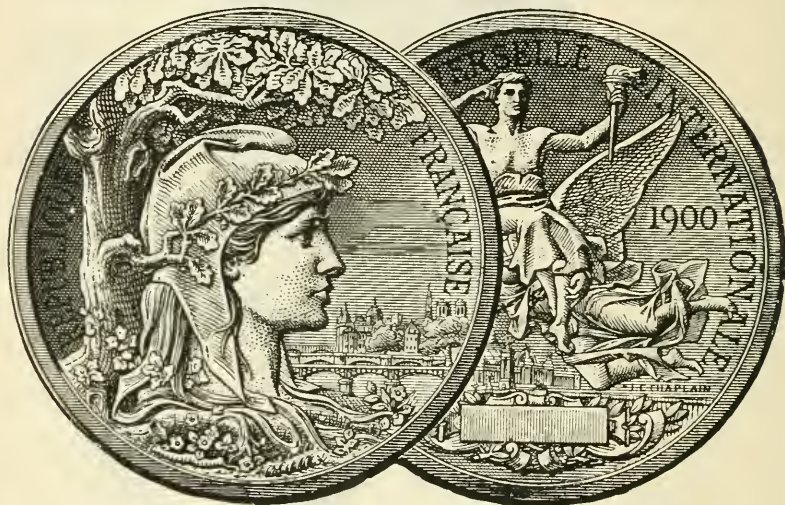
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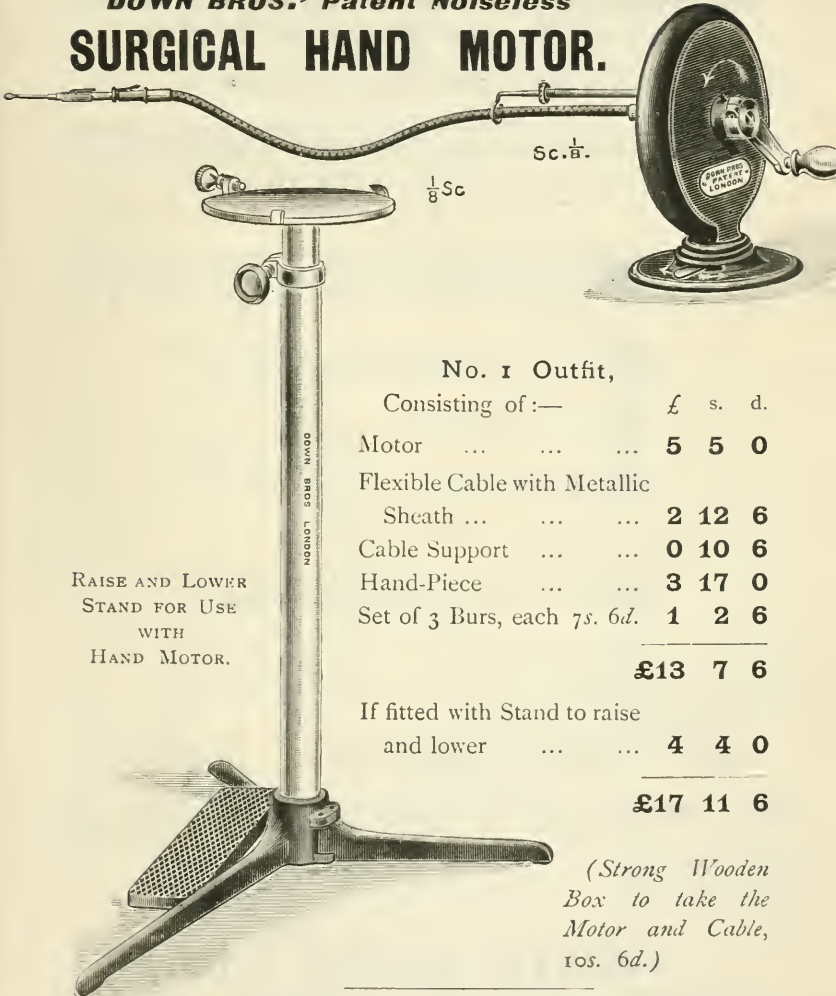
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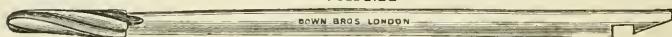
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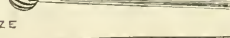
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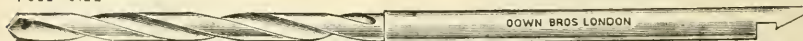
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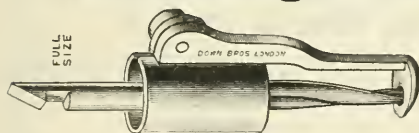
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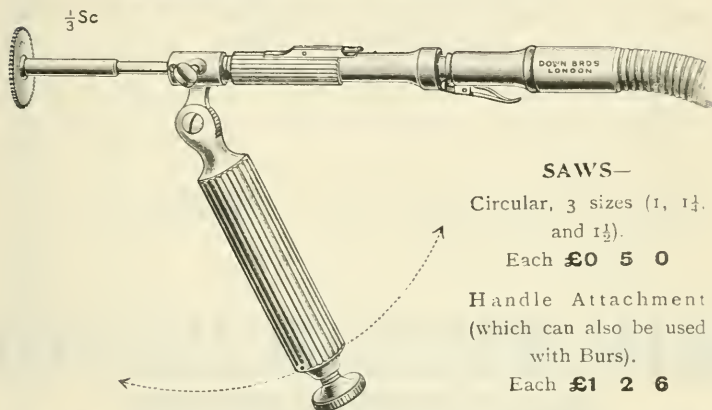
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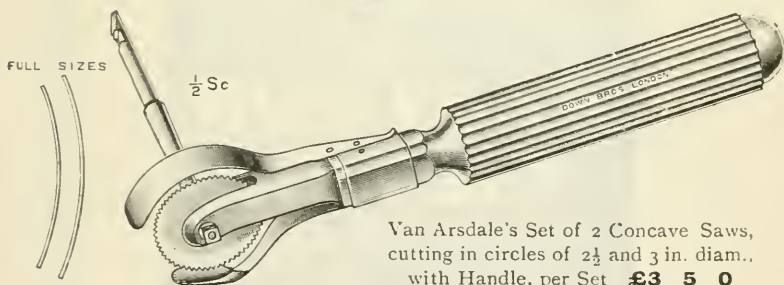
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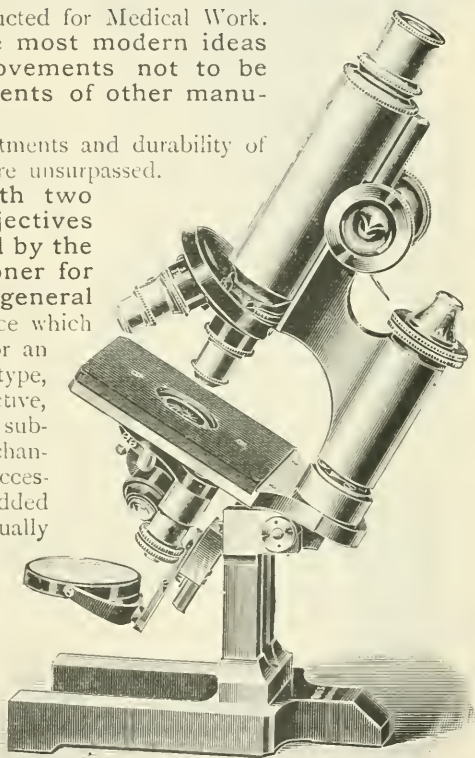
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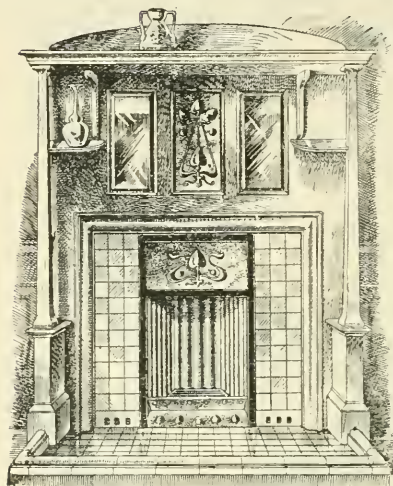
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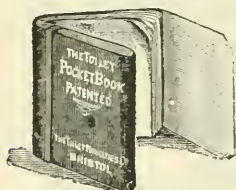
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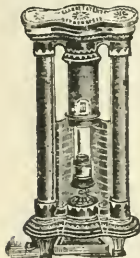
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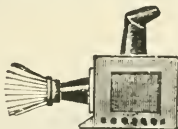
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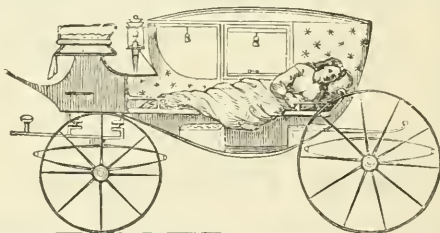
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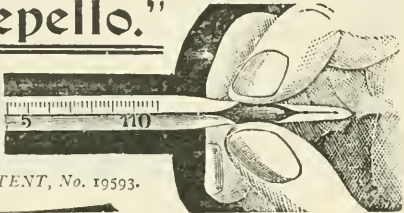
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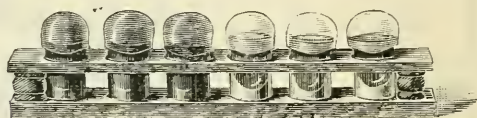


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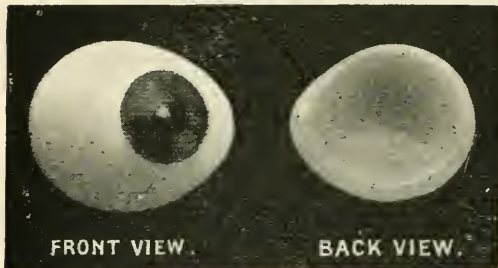
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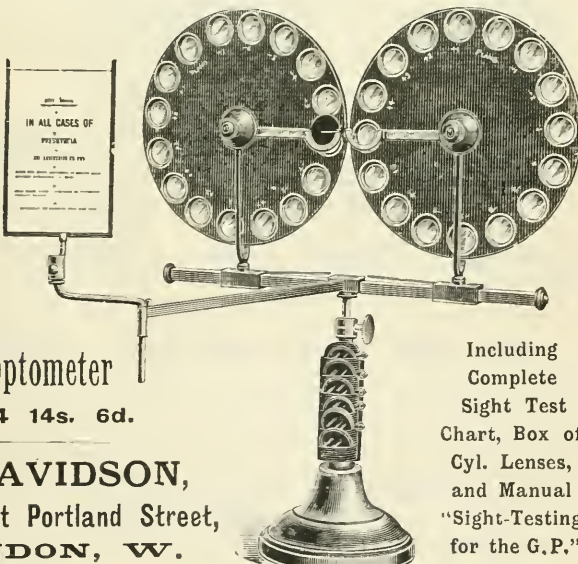
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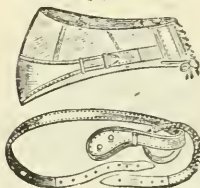


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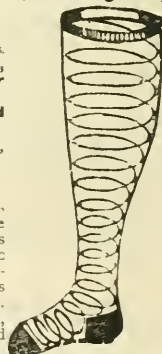
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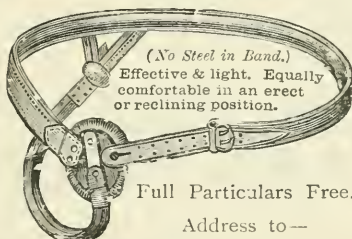
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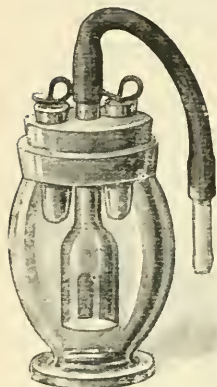
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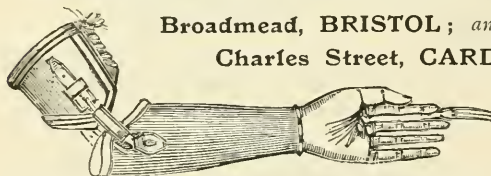
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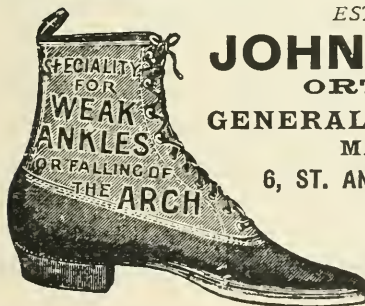
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Bromide	Distinct	Distinct
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See THE LANCET Nov. 24th Dec. 1st, 1894, Jan. 4th, 1896.

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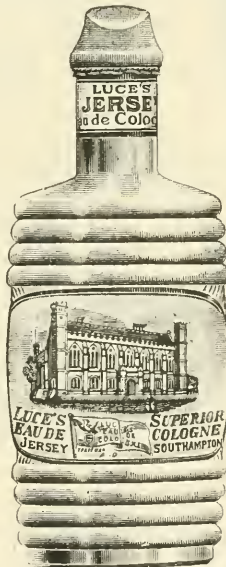
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Total malt extractives	6.74	5.42	7.09
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